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National Technical Information Service

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HEARING INVOLVING 180-DAY NOTICE OF VIOLATION OF WATER QUALITY STANDARDS OF THE CITY OF FARGO, NORTH DAKOTA HELD IN FARGO, NORTH DAKOTA ON JULY 10, 1970

FEDERAL WATER QUALITY ADMINISTRATION
WASHINGTON, D. C.

OCTOBER 1975

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HEARING

involving 180-day notice of violation of Water Quality Standards of the City of Fargo, North Dakota

held in

Fargo, North Dakota

July 10, 1970

TRANSCRIPT OF PROCEEDINGS

Federal Water Quality Administration
U. S. Department of the Interior
Washington, D. C.

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is documented

The hearing involving 180-day notice of violation of Water Quality Standards by the City of Fargo, North Dakota, convened at 9:30 o'clock on July 10, 1970, in the Royal Room of Kahler's Oak Manor Motor Lodge, Fargo, North Dakota.

PRESIDING:

Mr. Murray Stein
Chief Enforcement Officer
Federal Water Quality Administration
U. S. Department of the Interior
Washington, D. C.

CONFEREES:

Mr. John Rademacher
Regional Director, Missouri Basin Region
Federal Water Quality Administration
U. S. Department of the Interior
Washington, D. C.

Mr. W. Van Heuvelen
Executive Officer and
Chief Sanitary Engineer
North Dakota State Department of Health
Bismarck, North Dakota

Mr. Norman Peterson
Director, Division of Water Supply
and Pollution Control
North Dakota State Department of Health
Bismarck, North Dakota

Mayor Herschel Lashkowitz
President, City Commission
Fargo, North Dakota

Mr. John W. Markey
City Commissioner
Fargo, North Dakota

Mr. Kenneth Ruby
Superintendent, Water and Sewage Utilities
Fargo, North Dakota

Mr. Wayne O. Solberg
City Attorney
Fargo, North Dakota

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Mr. Ron Stahlberg
City Engineer
Moorhead, Minnesota

Mr. W. Van Heuvelen
Executive Officer and Chief Sanitary Engineer
North Dakota State Department of Health
Bismarck, North Dakota

- - -

PROCEEDINGS

OPENING STATEMENT

BY

MR. MURRAY STEIN

MR. STEIN: The hearing is open.

The Secretary of the Interior is charged by law with specific responsibilities in the field of water pollution control. The Federal Water Pollution Control Act provides that the discharge of matter into interstate waters or portions thereof which reduces the quality of such waters below the water quality standards established by law is subject to abatement as provided in the Federal Act. This applies whether the matter causing or contributing to such reduction of water quality is discharged directly into such waters or reaches such waters after discharge into a tributary.

Pursuant to Section 10(c)(5) of the Federal Water Pollution Control Act, and applicable Regulations published in the Federal Register, Secretary of the Interior Walter J. Hickel, on May 19, 1970, sent a letter to the Mayor of the

City of Fargo, North Dakota, notifying him that the City's operations located on and discharging effluent into the Red River of the North are responsible for violation of the established State and Federal Water Quality Standards for the interstate waters of the Red River of the North. Secretary Hickel's letter constitutes a 180-day notification of the violation of the established water quality standards.

At this informal hearing we will discuss the alleged violations with the City of Fargo, outline the pollution problems, and ascertain what appropriate remedial action may be taken on a voluntary basis.

Before we introduce the people at the horseshoe table here, I would now like to call on Mayor Lashkowitz, who is an old friend and colleague. One of these days I am going to get back here and visit with him under more pleasant circumstances.

HON. HERSCHEL LASHKOWITZ
MAYOR OF THE CITY OF FARGO
NORTH DAKOTA

MAYOR LASHKOWITZ: Thank you, Commissioner Stein.

Hon. H. Lashkowitz

Ladies and gentlemen. I prepared a preliminary statement, which is available. We have some copies here.

We are here this morning by virtue of a notice received from the Honorable Walter J. Hickel, Secretary of the Interior, concerning alleged violations of State and Federal Water Quality Standards by the City of Fargo, North Dakota. More particularly, Secretary Hickel makes reference to, a) No untreated domestic sewage shall be discharged into surface waters of the State; and b) No substances attributable to municipal wastes shall be discharged into the waters which will settle to form objectionable sludge deposits, will result in the waters being toxic or harmful to human, animal, or aquatic life, or in any manner adversely affect the intended usage of the water.

Secretary Hickel's letter is pursuant to the section of the statutes as referred to by Commissioner Stein.

We are pleased to relate a brief history of the efforts of the City of Fargo in the combatting of pollution over the years, and we have present today a number of city officials concerned with this problem and who have worked actively in this field - namely, the Commissioner of the Sewage

Treatment Plant John W. Markey; Superintendent of the Plant Kenneth Ruby; City Engineer Wilbur Michelson; City Planning Coordinator Earl Stewart; City Attorney Wayne O. Solberg; and perhaps others that I may not have observed. Each of these gentlemen has been involved in helping to develop present programs and those that are planned to enable Fargo to meet the standards for adequate sewage treatment.

Fargo's commitment to the war on sewage pollution is a long-standing one going back many years. One of the more significant steps in recent years was the building of Fargo's present sewage disposal plant in 1936 at a cost of approximately $775,000, which included a Federal grant of $210,095.

This treatment plant served the City quite well for a number of years, until the latter part of the 1950's, when it was recognized that the facilities were inadequate to meet the burgeoning population growth and the expected increased need for sewage disposal. Thus, in September of 1959 the firm of Black & Veatch, Consulting Engineers from Kansas City, Missouri, were retained to design the proposed sewage disposal plant expansion program. This program was undertaken in two steps, with the first stage completed in December of 1962 at a total cost of $852,966, with an HEW grant of $250,000 to apply towards this cost.

The second phase of the expansion program was completed in September of 1964, costing $566,712, with an additional Health, Education and Welfare grant of $168,270. Thus, in 1964 the sewage treatment plant expansion program was completed at a total cost of $1,419,678 and with a total of Federal assistance in the sum of $418,270. The plant expansion program was designed to serve a population of 70,000 people with a corresponding BOD load of 11,900 pounds per day and a suspended solids load of 17,500 pounds per day. The expanded plant was designed with a capacity of efficiently treating a daily sewage flow of 9.45 million gallons, with the representation by Black & Veatch that the effluent quality will be such that all reasonable downstream uses of the Red River will be protected."

The principal components of the recommended improvements proposed by Black & Veatch in 1959 were new raw sewage pumping station with automatic screening of the sewage and solids grinding, a new grit chamber and aeration basin, a new Parshall measuring flume structure, a new sludge pump house, two new primary settling basins, one new circular trickling

Hon. H. Lashkowitz

filter, one new final settling basin, two new sludge digestion tanks with a control house, new sludge drying beds and new sludge lagoons.

Today we find that Fargo's population is approaching 53,000 as compiled in the 1970 Federal census, considerably under the 70,000 population capacity outlined as the capability of services of the existing facility as expanded in the early 1960's, as outlined and recommended and developed under the Black & Veatch guidance.

As evidence of Fargo's continuing commitment to the unceasing problem of refining the sewage treatment process, the City of Fargo retained consulting engineers in June of 1970 to design additions necessary to better meet the water quality standards. As evidence of the solid financial basis of the sewage treatment plant, the amount of bonded indebtedness of the utility is at $850,000. As further evidence of Fargo's commitment to clean water, there has been budgeted in the year 1968-1969, that is fiscal 1968-1969, the sum of $252,391.53, and in the fiscal year 1969-1970 the sum of $260,856.00, and in the fiscal year 1970-1971 the sum of $301,878.00. The City has a full-time staff of ten employees concerned with sewage utility operations, including a Superintendent who gives 40 percent of his time to sewage disposal and the balance of 60 percent to water treatment; an Assistant Sewage Plant Superintendent; two Sewage Plant Operator II's; six Sewage Plant Operator I's; and a Sewage Operator and Chemist. All of the Sewage Treatment Plant Operators but one have certificates issued by the North Dakota Water and Pollution Control Conference as to competency. The one exception is an employee of only four months.

In addition, the City of Fargo has undertaken further efforts to comply with advanced sewage treatment techniques and accordingly embarked upon a sewer separation program. The City has approximately 73 miles of combined sewers and submitted an application to the Department of Housing and Urban Development in August of 1969 seeking Federal assistance in the sum of $1 million to separate the combined sewers in the area from the Great Northern tracks to Thirteenth Avenue North. We have been assured by HUD officials at the Regional level that the full application will receive approval in a matter of days. As a matter of fact, we were advised unofficially that the full application was to have been totally processed during the last quarter of fiscal 1969-1970 and apparently will be acted upon favorably very shortly with a construction contemplated under this program in the early spring of 1971, with completion expected during the same season. The initial preliminary application was presented in August of 1969 and, of course, the full application in March of 1970.

The City Engineer's office is presently engaged in preparing another application to be submitted in September of 1970, looking for Federal assistance from the Department of Housing and Urban Development to separate combined sewers in the area from Thirteenth Avenue North to Seventeenth Avenue North. Upon approval of our pending application, we will have separated approximately 17 miles or 22 percent of the City's combined sewers.

The City Engineer's office is planning additional sewer separation programs over the course of five to ten years, contingent upon the amount of Federal assistance available. In the words of City Engineer Wilbur Michelson, "Federal aid is absolutely necessary due to the extremely high cost of installing sewers in built-up areas." This statement might be well described as the understatement of the season. Unless this Federal assistance is provided, the cost, due to the inflationary spiral, in terms of initial cash outlay for such installations can be staggering and almost prohibitive. It is, therefore, imperative that a program of assured Federal assistance on a continuing basis be established so that we can meet all of the requirements in maintaining the quality of water.

We respect the deep concern of Secretary Hickel and commend him for his efforts to insist upon a full effort of the American people in the fight on pollution. In this endeavor, Secretary Hickel is entitled to the complete cooperation of not only the American cities, but also the Congress of the United States and the Administration, on a bipartisan basis.

If this massive effort which we project is to be successfully mounted, then it is more imperative than ever that a reordering of priorities be accomplished at all levels of government, with a corresponding re-allocation of available resources to enable us to get the job done.

The present level of appropriations for the installation of sewage treatment facilities and the separation of storm sewers is plainly inadequate.

Hon. H. Lashkowitz

The City of Fargo has a long history of concern and commitment to the cause of clean water. Our City has relatively little major pollution of its waters originating in the City of Fargo as a result of non-treatment. I might add I have just been noticing the statement prepared by the State Health Department, which will be presented by Mr. Peterson very shortly, and I want to acknowledge that we have an excellent standing with the State Health Department, and I would hope that this full statement, unabridged and unedited, will be stated in the record, because I think it states more emphatically and less self-servingly the great efforts that have been undertaken in the City of Fargo.

The City of Fargo undertook its programs as we have outlined above in a spirit of good faith to seek a goal of clean water by expending considerable sums for capital outlay, professional services, and annual budgetary appropriations to meet this commitment.

We have been extremely fortunate over the years in having had dedicated City officials entrusted with the responsibility of supervising and administering our sewage treatment plant facilities. It has been my privilege to have worked with two outstanding Commissioners who have held this portfolio and have served well--namely, the late Commissioner Fred C. Hagen and now Commissioner John W. Markey. I also recall the services of three competent and devoted Superintendents--the late H. H. Behlmer, the late Frank W. Pinny, and now Kenneth Ruby.

The recital of this capsule of Fargo's more recent history in the area of planning and programming for sewage treatment and disposal states quite emphatically that the City of Fargo has had a long history in the fight against pollution. We are not Johnny-come-latelys at the eleventh hour and we are not just climbing on any band wagons. We have been in this fight for years and we are happy to be your allies. We are not simply facing up to the problem today, but have had a longstanding awareness of this great social need. While we do not have the gross offending major industries with tremendous chemical output that many larger cities are experiencing, we nevertheless recognize that there is this problem, a problem of sharing a common watershed with many neighbors, some urban and some rural. We feel that if we are provided with the necessary financial resources that we will move with even greater dispatch in completing the present planned programs. These programs can be accelerated only if the necessary financial assistance is forthcoming. We must have this assistance if the property owners and taxpayers of the City are to be able to sustain this cost factor in the fight for clean water.

In checking with other neighboring cities, I note that our City has a more sophisticated process than any other cities that have only in recent years moved into the area of mechanical sewage treatment plants. In other words, many of the cities were involved in this in a less sophisticated manner of treatment. We of Fargo have tried to be pace setters in terms of meeting the social needs of the community. We shall continue to maintain this effort.

In the meantime, it is of the utmost importance that the message be taken back to Washington in clear and unmistakable terms that the appropriations for the planning and development of additional sewage treatment facilities and for the planning and developing of sewer separation programs must be greatly increased. This means a reordering of priorities. We have heard that term used very frequently in recent years, but this relates it to immediate daily housekeeping operations. This means that if this job is to be accomplished, we cannot afford the luxury of politics as usual, but rather we must have unity with men and women of good will, joining hands in a bipartisan manner and addressing ourselves to the quality of our water and to safeguarding the health of our people. The people of Fargo, I believe, will continue to meet their historic commitment, but they are entitled to every bit of Federal assistance that is available.

We pledge our cooperation to Secretary Hickel and Commissioner Stein and all other members of the Department of the Interior in a united effort in the war against pollution. We pledge the very best within ourselves to meet this challenge. We feel that Fargo can again be out in front in this area of human need and that when Fargo's efforts in the past, its continuing commitment in the present, and its determination to face the future is evaluated that Fargo will stand high in the roll call of cities across America.

We are proud of the Fargo City officials who have preceded us in the fight for pure water. We are proud of those who work with us today.

I might add, gentlemen and ladies, that we made a cursory compilation, unofficial, incomplete, but it does give us some glimpse, overall glimpse, as to what Fargo has expended apart from annual budgetary requirements. This is simply for capital improvements. This does not take into consideration what we budgeted year in and year out to operate the sewage treatment plant.

The figures that have been presented to me indicate that in the last 30 years there has been an expenditure locally for sewers, combined sewers, sanitary sewers and storm sewers, and as I state, this is incomplete and unofficial, but nevertheless I think it has some validity, of $12,945,644.52. We have in the City of Fargo sanitary sewers, total sewers in use today, according to reports filed with the City Engineer's office, of 72.56 miles, storm sewers 49.237 miles, combined sewers, as already referred to, of 73.863 miles. This is a tremendous, tremendous commitment in capital improvements. It is a tremendous commitment in terms of annual budgetary appropriations for maintenance and administration.

We do have a plant facility out here that I am certain we can state with good conscience is a great facility. It is highly sophisticated. It is well administered and managed. I believe, by way of conclusion, that the people of our City have had a long standing commitment to this matter of clean water and responsibility in disposal of sewage. I would be remiss if I didn't state that the people of our community are fully aware of their responsibilities.

And in conclusion, Mr. Commissioner and ladies and gentlemen, I underscore and emphasize very strongly the need for a reordering of priorities and the increasing of the commitment of the Federal Government in funneling back to the cities of America more of the taxes that are collected to enable us to continue this fight against pollution.

We are glad that you are here. We are prepared to lay before you all of the facts that we have and we pledge to you our continuing cooperation.

Thank you.

MR. STEIN: Thank you, Mayor.

I have always said this, but I think you have a remarkable man up here in Mayor Lashkowitz. I have pointed out his approach and his comments to other Mayors, because I think this is the ideal way to respond or to meet a situation like this.

I would like to say to the Mayor that we are not here in an adverse capacity. Although we are required to carry out the law, we will do everything we can in the way of working with the State and with you to try to correct the problem. As you know, while I wear the hat of the Enforcement Officer, I thoroughly agree with the Mayor's comments regarding financing and I help in every way I possibly can.

Because we took this first, I would like to make a comment before we go back to the procedure on this so you may be able to follow the statements and the testimony that is coming up later. We normally would have proceeded with the Federal statement first, the State statement next, and then the City. But because of our pre-knowledge of Mayor Lashkowitz's familiarity with and long-time analysis of this problem, we went the other way this morning.

However, the problem, gentlemen, may be this, as I see from reading the preliminary report. In water pollution control very often, though we keep building and working towards something, we may be faced with a moving target. We did establish some requirements in a series of conferences with the State several years ago. We do know that there are other sources of the river, which we will talk about. The City of

M. Stein

Fargo is not alone. However, since the last time we did have a standard setting operation where both Minnesota and North Dakota set standards and the Federal Government adopted these and these are now Federal standards as well as State standards. We also know that you have some peculiar conditions here, peculiar to this part of the country, which aren't extant in other parts of the country, and those arise from tremendous variations in temperature.

I think in order to understand the problem, I will go through my standard two-minute course on waste treatment. Generally they have primary treatment, and I am oversimplifying somewhat but not too much, which just slows up the water and the settleable solids settle out. This means quite a bit, because a good deal of the deleterious material, the germs and the pathogens, are in the settleable material.

Then, of course, you haven't cleaned out the material which is in a colloidal suspension or in a solution. Secondary treatment usually is a biological phase of treatment. There are two usual ways of doing this, or you might say three.

Some people, particularly in this area, have lagoons.

But for the larger cities, what they have is a trickling

M. Stein

filter. You have seen that, the kind of cylindrical bodies with stone or something in it. The sewage after primary treatment is put through this trickling filter and in the interstices of the rocks there is a film of bacteria that is grown up and they eat away like mad as this comes through.

Or else you have an activated sludge plant where you get this material and you kind of build up a sludge starter, a composition almost like a yogurt culture or something, and put it in there and then you let that eat and it clobbers and gets thick and they take it out.

The problem with a biological process is that it doesn't work all the time in the same way. It is just like humans or any other biological animal. No animal or no biological process works the same two days in a row, more or less. However, when you get these temperature variations, as we have in this part of the country, and you have these extremely cold temperatures, the question here is whether that affects the biological process in any way and cuts down the efficiency of the removal process. Maybe those bugs work a little slower or they are not around in the cold weather.

Then that is further exacerbated in the Red River situation when during the winter you have an ice cover over the river, because you don't have the complete oxygen interchange and that riffle stuff that you get in other rivers. And if you have some deleterious substances removing, in a sense, in a closed room, we found out in the past that in the Red River of the North we may cause some very serious effects on the biota underneath.

What I am saying, again, is not in any kind of an adversary sense at all. I am saying that what we are possibly faced with here, and I think we have to listen to the points as they come up, is recognition that the City of Fargo has moved forward with a program which was established years ago, recognition that we also have additional standards, and we have to make the analysis of whether, given the peculiar conditions of North Dakota and the Red River of the North, this is working now or we have to do some more.

I make no prejudgments on this, but I just wanted to outline the problem so you people may be able to follow what we are looking for and what we are trying to seek in here.

By the way, I think if we are going to solve this problem, we are going to need the help of the State and the

City working with us in the Federal Government, all together in a partnership relationship, as Mayor Lashkowitz indicated would be ideal. I fully agree with him on that.

I would like to now call on the Conferees to introduce themselves. Could we go around the table, please?

MR. MARKEY: My name is John Markey, Utility Commissioner.

MR. SOLBERG: Wayne Solberg, City Attorney.

MR. RUBY: Kenneth Ruby, Superintendent of Water and Sewage Utilities.

MR. PETERSON: Norman Peterson, North Dakota State Health Department.

MR. VAN HEUVELEN: W. Van Heuvelen, North Dakota State Department of Health.

MR. RADEMACHER: John Rademacher, Regional Director for the Water Quality Administration in Kansas City.

MR. STEIN: My name is Murray Stein. I am from the U. S. Department of the Interior, Washington, D. C., and the representative of Secretary Hickel.

We are having a transcript made of the conference by Mrs. Virginia Rankin. Mrs. Rankin is an independent contractor.

M. Stein

The transcript of this conference will not be published. Anyone wanting a copy can make their own arrangements with Mrs. Rankin.

We will only print in black and white, so if anyone has anything in color and you refer to it in color, remember that your color will not show up in the printed record. If there are any slides, since we are doing this in black and white, it would be preferable to have these as exhibits.

What we propose to do is have a Federal presentation, a State presentation, then we will hear anyone from the audience who wishes to make a statement. If anyone wishes to make a statement from the audience, I would suggest you give your name and express your intentions to Mrs. Piere.

Will you stand up, Mrs. Piere.

And she will get that up to me. Also, at about 10:45 we expect to have coffee and we will have a slight recess at that time.

With that, I would like to call on Mr. Rademacher for the Federal presentation.

J. M. Rademacher

JOHN M. RADEMACHER, REGIONAL DIRECTOR
MISSOURI BASIN REGION, FEDERAL WATER QUALITY
ADMINISTRATION, U. S. DEPARTMENT OF THE INTERIOR
KANSAS CITY, MISSOURI

MR. RADEMACHER: Thank you, Chairman Stein. Ladies and gentlemen.

My purpose to be up here is to introduce the staff engineer who is responsible for the survey work during the past winter, actually from September through April over the past two years, working here in the Fargo-Moorhead area, all the way to Oslo, Minnesota.

We surveyed this river because of the historical problems that have been associated with the cold weather operations of the treatment facilities in this area and the effects downstream.

I would also like to introduce the Chief of the National Task Force for Enforcement, who is here, and who had been in charge of several of the previous surveys connected with the Federal-State enforcement actions in the past, Mr. A. D. Sidio. He is here from Cincinnati and can be called upon for reference back to those surveys if necessary.

I also have my Chief of Enforcement in Kansas City, Mr. Robert Markey. I don't know if there is a relationship there with Commissioner Markey. And Mr. Blomgren, Chief of Technical Support.

I would like to call at this time on our staff engineer and survey chief for the Red River studies, Mr. Bob Hegg. His name is Bob.

I would call on him at this time to make the Federal presentation.

Bob.

MR. STEIN: While Mr. Hegg is coming up, I would like to say something, and if the person concerned doesn't want this in the record, we will strike it out.

These conferences do come up with some good. Last time we were in Fargo Mr. Sidio was here in his capacity from Cincinnati and we also had an administrator who worked out of Washington for Mr. Warrick, our technical supervisor. In Fargo they began to talk to each other and date and they have been married ever since. So you see, we did do something. Fargo has helped us quite a bit.

Come on up.

BOB HEGG, SANITARY ENGINEER

MISSOURI BASIN REGION, FEDERAL WATER QUALITY

ADMINISTRATION, U. S. DEPARTMENT OF THE INTERIOR

KANSAS CITY, MISSOURI

MR. HEGG: Mr. Chairman, ladies and gentlemen.

My name is Bob Hegg and I am a Sanitary Engineer for the Federal Water Quality Administration, Missouri Basin Region.

The following will be a statement to the Chairman regarding the hearing relating to the violation of State and Federal Water Quality Standards by the City of Fargo, North Dakota, July 10, 1970.

Mr. Chairman, I would like to request that this report entitled, "The Impact of Fargo, North Dakota's Waste Discharges on the Interstate Waters of the Red River of the North," be submitted to the record as if read.

MR. STEIN: It will be entered into the record as if read.

MR. HEGG: Thank you.

(Which said report follows:)

THE IMPACT OF FARGO, NORTH DAKOTA'S WASTE DISCHARGES ON THE INTERSTATE WATERS OF THE RED RIVER OF THE NORTH

SEPTEMBER 1969 - APRIL 1970

UNITED STATES DEPARTMENT OF THE INTERIOR
FEDERAL WATER QUALITY ADMINISTRATION
MISSOURI BASIN REGION
KANSAS CITY, MISSOURI
JULY 1970

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I. INTRODUCTION

In 1965 a Federal-State conference (Conference in the Matter of Pollution of the Interstate Waters of the Red River of the North, Minnesota-North Dakota, September 14, 1965; January 18, 1966; and March 4, 1966) was held to examine the matter of pollution on the Red River of the North. One significant conference finding was the occurrence of reduced dissolved oxygen (D.O.) concentrations. The recurring incidents of depressed oxygen levels in the Red River of the North between Fargo and Grand Forks especially during periods of ice cover resulted in the initiation of an additional field investigation by the Federal Water Quality Administration (FWQA) in cooperation with the States of North Dakota and Minnesota during the period September 1969 through April 1970.

This field survey was designed to determine the impact of waste sources in the Fargo-Moorhead area on the quality of the Red River of the North. The study area encompassed that portion of the River from Fargo-Moorhead to Oslo, Minnesota, which is 25 miles downstream from Grand Forks, North Dakota.

The survey effort provided data for answering the following questions:

1. What is the general quality of the water in the River downstream from the metropolitan areas and does this quality conform with the accepted water quality criteria as delineated in Federal-State Water Quality Standards?

2. What are the relative waste contributions from the major waste sources in the Fargo-Moorhead area?

3. What is the overall performance level of the waste treatment plants at Fargo and Moorhead, particularly during ice cover on the river which is considered the most critical period.

In answering these questions, a portion of the survey consisted of a detailed investigation of the Fargo Sewage Treatment Plant. It is the purpose of this report to outline the specific 1969-1970 survey findings that pertain to Fargo, North Dakota.

II. SUMMARY AND CONCLUSIONS

A pollution evaluation survey was conducted on the Red River of the North from September 1969 to April 1970. The survey provided answers to several questions concerning pollution of the River.

Determination of the various seasonal waste contributions was accomplished. The total pounds of biochemical oxygen demand (BOD_5) discharged from the Fargo-Moorhead area during the survey period ranged between a low of 4203 pounds of BOD_5 per day in March to a high of 44,241 pounds of BOD_5 per day in October. The contribution of each major waste source in the Fargo-Moorhead Area to the total BOD_5 load was determined. The quantity of wastes from Fargo, North Dakota steadily increased as the efficiency of the plant declined during winter months with Fargo contributing a peak of 82 percent of the total organic waste load discharged from the Fargo-Moorhead area in March.

The combined waste discharges from the Fargo-Moorhead Area had an adverse effect on the water quality of the Red River of the North. Numerous violations of Federal-State Water Quality Standards occurred during the 1969-1970 survey period. These included violations of the dissolved oxygen criteria, the bacterial criteria and violation of State effluent requirements.

Specific conclusions that pertain to the Red River of the North within the study area and to Fargo's Sewage Treatment Plant are outlined below:

A. RED RIVER OF THE NORTH - FARGO, NORTH DAKOTA TO OSLO, MINNESOTA

1. The critical period for maintaining 5 mg/l of dissolved oxygen in the Red River of the North was during winter months under conditions of ice cover. Monthly averages of dissolved oxygen concentrations less than 5 mg/l were determined by samples selected from the Red River at three stream sampling stations in January, four stations in February, and two stations in March.

2. Waste sources in the Fargo-Moorhead area contributed abundant quantities of nutrients to the Red River of the North including nitrate-nitrogen and total phosphorus.

B. FARGO, NORTH DAKOTA - SEWAGE TREATMENT PLANT

1. The decreasing efficiency of removal of biochemical oxygen demand and total suspended solids by Fargo's Sewage Treatment Plant brought on by severely cold weather resulted in increased waste loads being discharged to the river adversely affecting the dissolved oxygen levels.

2. Monthly average effluent concentrations of the samples taken always exceeded North Dakota's effluent criteria of 25 mg/l BOD_5 and 30 mg/l of TSS.

3. Fargo was the major contributor of BOD_5 and TSS discharges to the Red River from the Fargo-Moorhead Area during the months of January, February, March, and April, contributing 43%, 61%, 32%, and 73% of the monthly average pounds of BOD_5 per day discharged and 57%, 64%, 61%, and 65% of the pounds of the monthly average of TSS per day discharged respectively.

4. Fargo's disinfection facilities provided sufficient bacterial removals to meet the effluent criteria during the survey period. However, it was noted by visitors to the plant on June 3, 1970, that no chlorine was being added and none was available at the plant.

III. RECOMMENDATIONS

Those recommendations, based on the survey and a subsequent visit to the area, that apply to Fargo, North Dakota are outlined below:

1. Continuous disinfection should be provided for all wastes discharged from the City of Fargo.

2. The treatment facilities should be operated to effect the maximum practical reduction of nitrogen and phosphorus.

3. Wastes from the City of Fargo must be provided sufficient treatment to avoid damaging waste loads being discharged to the Red River particularly during the critical winter months.

IV. METHOD OF STUDY

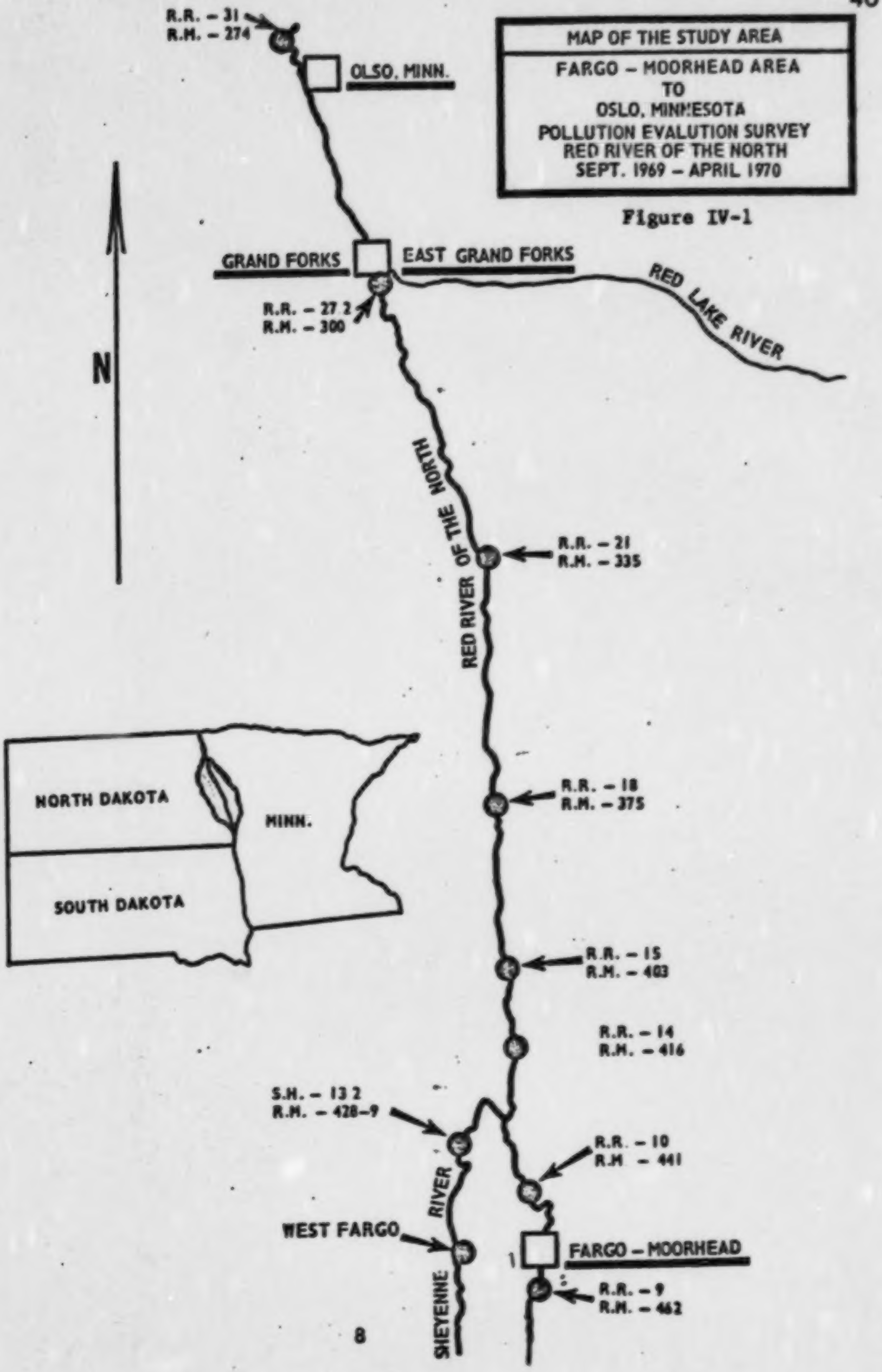
The 1969-1970 survey included that portion of the Main Stem of the Red River of the North from River Mile 274.0 at Oslo, Minnesota to River Mile 462.0 just upstream from the Fargo-Moorhead Area. The study area and sampling locations are shown in Figures IV-1 and IV-2. The station descriptions are given in Table IV-1.

A. General Description

The pollution evaluation survey of the Red River of the North was conducted from September 1969 through the first week in April 1970. This time schedule was selected so that the seasonal changes during this period, especially under ice cover, could be monitored. Laboratory facilities were provided by the Civil Engineering and Microbiological Departments of the North Dakota State University. Samples were collected at thirteen stations spread over 182 river miles and from all known waste sources in the Fargo-Moorhead area. Visual observations were made between sampling intervals to maintain survey continuity.

B. Sampling Schedule and Collection

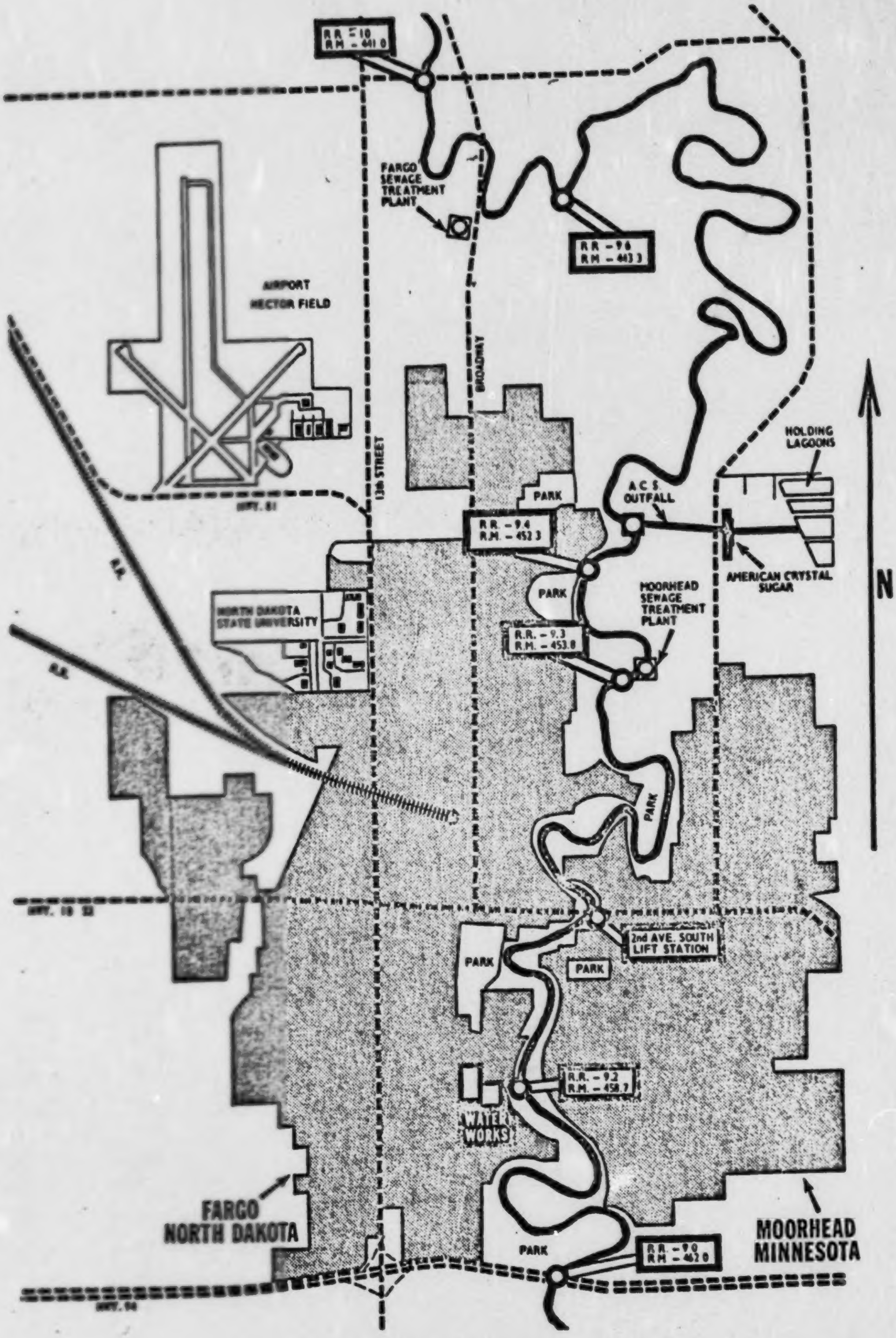
Samples taken from the wastewater treatment plants, were composited on a two-hour basis for 24 hours. These composites were collected for analysis three times a week. Analyses made on the composites included: chlorides, turbidity, conductivity (RB-3), suspended solids, pH, and BOD (5-day at 20°C).



MAP OF THE STUDY AREA

FARGO – MOORHEAD AREA
TO
OSLO, MINNESOTA
POLLUTION EVALUTION SURVEY
RED RIVER OF THE NORTH
SEPT. 1969 – APRIL 1970

Figure IV-1



MAP OF FARGO-MOORHEAD

POLLUTION EVALUATION SURVEY
RED RIVER OF THE NORTH
SEPT. 1969 – APRIL 1970

Figure IV-2

TABLE IV-1

STATION DESCRIPTIONS
POLLUTION EVALUATION SURVEY
RED RIVER OF THE NORTH
SEPTEMBER 1969 - APRIL 1970

Station	River Mileage	Station Description
RR-9	462.0	Red River at I-94 Highway Bridge, Fargo, North Dakota.
RR-9.2	458.7	Red River at Fargo Water Intake.
2nd Ave. South Lift Station	457.4	2nd Avenue South Lift Station By-Pass (when discharging).
RR-9.3	453.8	Red River immediately upstream of Moorhead's STP effluent and above low head dam.
Moorhead STP	453.4	Moorhead STP Influent, Trickling Filter Effluent, Activated Sludge Effluent and Combined Chlorinated Effluent Composites.
RR-9.4	452.3	Red River below Moorhead's effluent and above American Crystal Sugar's outfall.
American Crystal Sugar	451.9	American Crystal Sugar's Effluent (when discharging).
RR-9.6	443.3	Red River at Cass County Farm below American Crystal Sugar effluent and above Fargo's effluent.
Fargo STP	442.5	Fargo STP Influent and Chlorinated Effluent Composite.
RR-10	441.0	Red River at Minnesota Clay County # 22 Bridge below all Fargo-Moorhead effluents.
SH-13.2	428-9	Sheyenne River at U.S. Highway 81 Bridge - 8 miles north of Fargo.
West Fargo	428-22	West Fargo Oxidation Pond Effluent (when discharging).
RR-14	416.0	Red River at County Road Bridge at Georgetown.
RR-15	403.0	Red River at County Road Bridge at Perley.

TABLE IV-1 Continued

STATION DESCRIPTIONS
POLLUTION EVALUATION SURVEY
RED RIVER OF THE NORTH
SEPTEMBER 1969 - APRIL 1970

Station	River Mileage	Station Description
RR-18	375.0	Red River at Halstad Bridge (USGS Gage).
RR-21	335.0	Red River at Bridge West of Climax.
RR-27.2	300.0	Red River at Grand Forks Water Intake.
RR-31	274.0	Red River of the North at Highway 1 Bridge at Oslo, Minnesota.

V. DATA PRESENTATION

A. Fargo Sewage Treatment Plant

Throughout the 1969-1970 survey period the known waste discharges in the Fargo-Moorhead Area were monitored. A summary of the results from Fargo's Sewage Treatment Plant is outlined below:

Fargo, North Dakota is served by a secondary sewage treatment plant consisting of primary clarifiers, two trickling filters operated in parallel, chlorination for disinfection and final clarification. During the 1969-1970 survey, composite samples were taken of the influent and chlorinated effluent. Tables V-1 and V-2 show the results and analyses on a monthly average basis for the 5 day, 20°C biochemical oxygen demand (BOD_5) and total suspended solids (TSS).

The percentage reduction by the treatment plant of BOD_5 and TSS is plotted on a monthly basis in Figures V-1 and V-2. Figure V-1 shows a decreasing trend in the percentage reduction of BOD_5 from 79% in November to 44% in April.

Figure V-2 shows the same decreasing trend for TSS. The percentage reduction goes from 88% in October to 52% in April.

The reduction in percentage removals from the fall to the winter months results from the decreased effectiveness during colder temperatures of the biologically dependent secondary treatment process.

The low percentage reductions in March and April are believed to be due to the effect of combined sewers which receive storm water and surface runoff in addition to sewage. The effect of these sewers is to increase the hydraulic loading while decreasing by dilution the strength of the sewage entering the treatment plant, which is demonstrated in Tables V-1 and V-2 in the March and April BOD_5 and TSS data. The final effect of the higher flows and decreased strength of the sewage is the low percentage of removal during March and April.

The decreased removals result in an increase in the pounds of BOD_5 and pounds of TSS discharged to the Red River. The BOD_5 discharged increased from a low of 1,983 pounds per day in September to a high of 3,492 pounds per day in January. The pounds of TSS discharged also increased from 1,730 pounds per day in September and a low of 1,597 pounds per day in November to a high in March of 3,628 pounds per day. Monthly average influent concentrations of BOD_5 and TSS remained relatively constant except for the decreased concentrations in March and April. The influent concentrations are about average for a typical domestic sewage.

Monthly average effluent concentrations of the samples taken always exceeded North Dakota's effluent criteria of 25 mg/1 BOD_5 and 30 mg/1 of TSS.

TABLE V-1

FARGO SEWAGE TREATMENT PLANT
MONTHLY AVERAGES - BIOCHEMICAL OXYGEN DEMAND (BOD_5)
POLLUTION EVALUATION SURVEY
RED RIVER OF THE NORTH
SEPTEMBER 1969 - APRIL 1970

Month	BOD5 Influent Conc. mg/l	BOD5 Effluent Conc. mg/l	% Reduction Of BOD_5	Flow MGD	Loading To Stream lbs. BOD_5/Day	Population Equiv. To Stream* Persons/Day
Sept.	210	47	77	5.06	1983	11,664
Oct.	246	51	80	5.09	2165	12,735
Nov.	264	55	79	4.67	2142	12,600
Dec.	215	70	68	5.01	2925	17,205
Jan.	228	79	66	5.30	3492	20,541
Feb.	214	78	64	5.03	3272	19,247
March	175	63	64	6.56	3447	20,276
April	144	82	44	5.08	3474	20,435

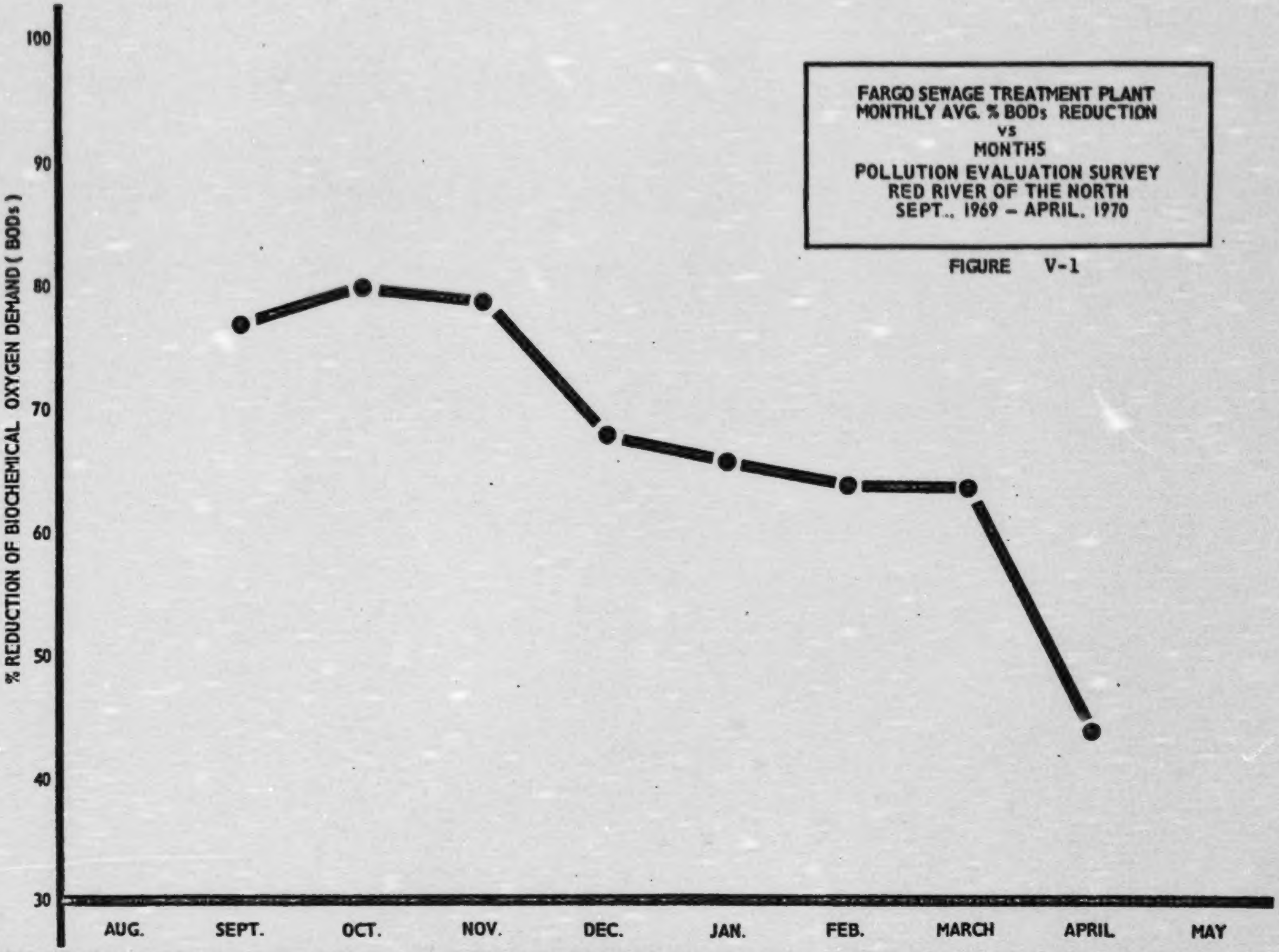
* 0.17 lbs BOD_5 per capita per day

TABLE V-2

FARGO SEWAGE TREATMENT PLANT
MONTHLY AVERAGES - TOTAL SUSPENDED SOLIDS (TSS)
POLLUTION EVALUATION SURVEY
RED RIVER OF THE NORTH
SEPTEMBER 1969 - APRIL 1970

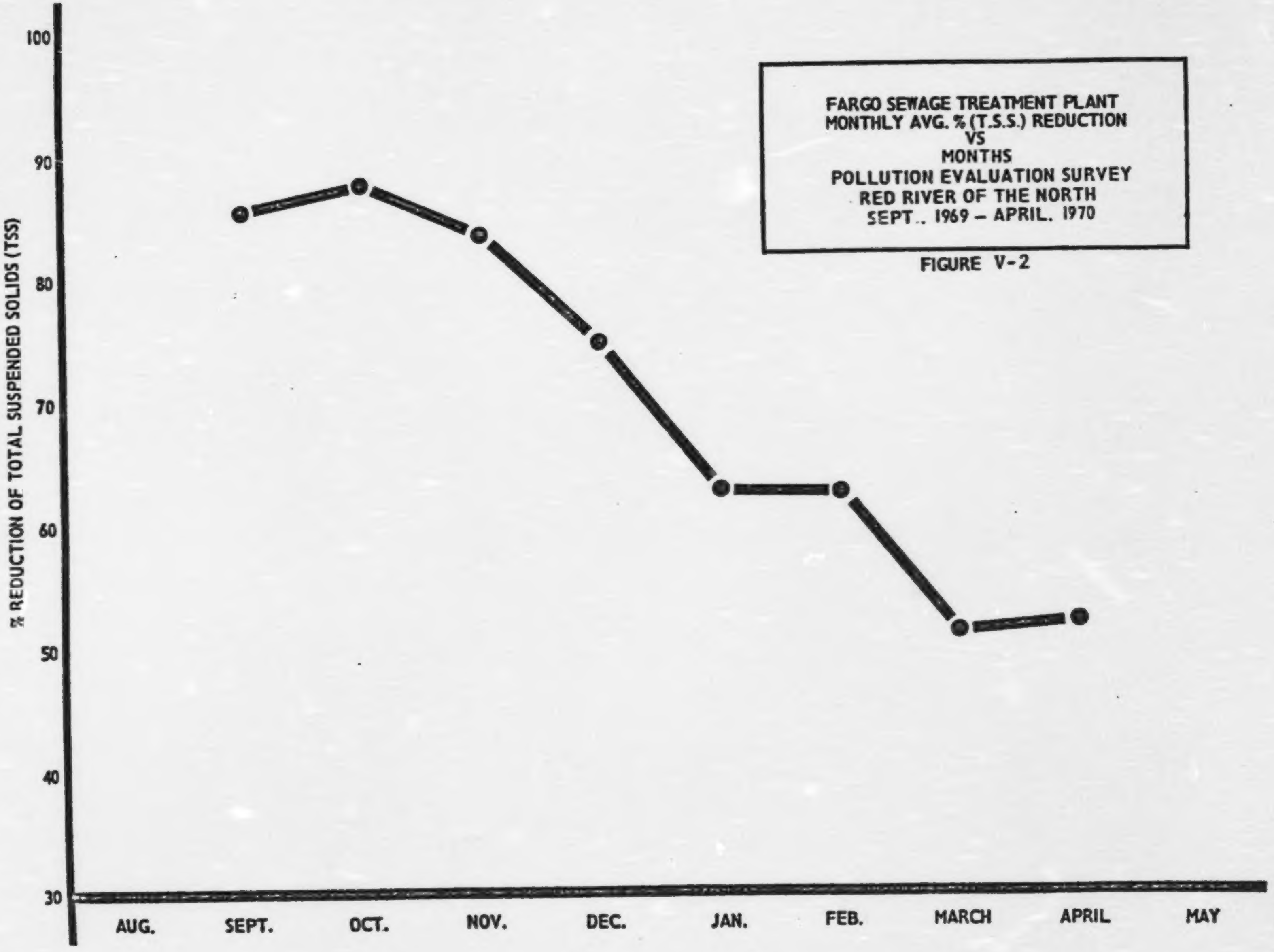
Month	TSS Influent Conc. mg/l	TSS Effluent Conc. mg/l	% Reduction Of TSS	Flow MGD	Loading To Stream lbs. TSS/Day	Population Equiv. To Stream* Persons/Day
Sept.	287	41	86	5.06	1730	8,650
Oct.	333	43	88	5.09	1825	9,125
Nov.	245	41	84	4.67	1597	7,985
Dec.	258	64	75	5.01	2674	13,370
Jan.	194	71	63	5.30	3138	15,690
Feb.	218	82	63	5.03	3440	17,200
March	148	73	51	5.96	3628	18,140
April	130	62	52	5.08	2627	13,135

* 0.20 lbs TSS per capita per day



FARGO SEWAGE TREATMENT PLANT
MONTHLY AVG. % BOD$_5$ REDUCTION
vs
MONTHS
POLLUTION EVALUATION SURVEY
RED RIVER OF THE NORTH
SEPT., 1969 – APRIL, 1970

FIGURE V-1



FARGO SEWAGE TREATMENT PLANT
MONTHLY AVG. % (T.S.S.) REDUCTION
VS
MONTHS
POLLUTION EVALUATION SURVEY
RED RIVER OF THE NORTH
SEPT., 1969 – APRIL, 1970

FIGURE V-2

B. Waste Discharges in the Fargo-Moorhead Area

Throughout the 1969-1970 survey period known waste discharges in the Fargo-Moorhead Area were monitored. From these results the waste contributions from these sources were determined. The monthly average pounds of BOD_5 per day discharged to the river ranged from a low of 4,203 pounds per day in March to a high of 44,241 pounds per day discharged during October. The monthly average pounds of TSS per day discharged varied between a low of 4,062 pounds per day in April to a high of 27,090 pounds per day in November.

Tables V-3 and V-4 give the monthly percentage contribution from each waste source for BOD_5 and TSS loads. Fargo was the major contributer during January, February, March and April contributing 43%, 61%, 82%, and 73% of the monthly average pounds of BOD_5 per day discharged and 57%, 64%, 61%, and 65% of the pounds of the monthly average of TSS discharged per day, respectively.

TABLE V-3

MONTHLY AVERAGE PERCENTAGES OF TOTAL LBS OF BOD_5 DISCHARGED TO THE RED RIVER FROM THE FARGO-MOORHEAD AREA
POLLUTION EVALUATION SURVEY
RED RIVER OF THE NORTH
SEPTEMBER 1969 - APRIL 1970

Month	Fargo Sewage Treatment Plant	Moorhead Sewage Treatment Plant	Second Avenue South Lift Station By-Pass Moorhead	American Crystal Sugar Moorhead Plant
Sept.	34%	14%	8%	44%
Oct.	5%	3%	1%	91%
Nov.	5%	2%	1%	92%
Dec.	30%	10%	5%	55%
Jan.	43%	12%	6%	39%
Feb.	61%	21%	--	18%
March	82%	18%	--	--
April	73%	26%	--	1%

TABLE V-4

MONTHLY AVERAGE PERCENTAGES OF TOTAL LBS OF TSS DISCHARGED TO THE RED RIVER FROM THE FARGO-MOORHEAD AREA
POLLUTION EVALUATION SURVEY
RED RIVER OF THE NORTH
SEPTEMBER 1969 - APRIL 1970

Month	Fargo Sewage Treatment Plant	Moorhead Sewage Treatment Plant	Second Avenue South Lift Station By-Pass Moorhead	American Crystal Sugar Moorhead Plant
Sept.	34%	11%	7%	48%
Oct.	16%	11%	3%	70%
Nov.	6%	3%	1%	90%
Dec.	23%	12%	4%	61%
Jan.	57%	32%	5%	6%
Feb.	64%	28%	--	8%
March	61%	39%	--	--
April	65%	35%	--	--

C. Stream Stations

Table V-5 shows the monthly average values for dissolved oxygen (D.O.) for the various stream stations. Those values of D.O. less than 5 mg/l are underlined.

When the river becomes covered with ice, the addition of oxygen through natural reaeration and algae photosynthesis ceases. The impact of the wastes from the Fargo-Moorhead area when ice limits the supply of oxygen is reflected in the low monthly average D.O. values during January, February, and March. It is noted that during January, February, March and April, Fargo was the major waste contributer in the Fargo-Moorhead Area.

The bacterial quality of the stream was measured by the total and fecal coliform content during October and November of 1969 and again in January 1970. The total coliform concentrations exceeded the 5,000 MPN/100ml standard at many of the stream stations. Fargo's effluent never exceeded a concentration of 5,000 MPN/100ml during the survey period, indicating effective chlorination. However, during a visit to Fargo's plant by FWQA personnel on June 3, 1970, it was noted that no chlorine was being added to the effluent nor was any chlorine available at the plant.

TABLE V-5

STREAM STATIONS
MONTHLY AVERAGES OF DISSOLVED OXYGEN*
POLLUTION EVALUATION SURVEY
RED RIVER OF THE NORTH
SEPTEMBER 1969 - APRIL 1970

STATION	R.M.	DISSOLVED OXYGEN FOR MONTH OF (mg/1)							
		SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR
RR 9.0	462.0	9.1	10.9	11.6	12.6	12.6	13.0	13.1	10.8
RR 9.2	458.7	8.2	11.2	12.0	12.5	12.6	12.3	12.9	10.8
RR 9.3	453.8	-	10.1	11.2	11.9	12.0	12.2	12.8	11.3
RR 9.4	452.3	6.9	8.9	11.2	12.6	12.5	12.6	13.4	11.6
RR 9.6	443.3	0.7	4.0	9.1	11.1	12.2	12.0	12.7	11.4
RR 10	441.0	6.6	3.6	8.4	10.7	11.0	11.6	12.6	11.5
RR 14	416.0	10.2	7.7	7.8	8.0	7.0	5.1	7.0	8.0
RR 15	403.0	10.4	8.4	7.2	8.0	6.1	4.8	6.4	7.8
RR 18	375.0	13.7	11.6	9.0	8.7	4.8	4.1	5.9	7.8
RR 21	335.0	10.6	12.4	10.5	8.0	3.5	4.4	4.7	6.9
RR 27.2	300.0	-	9.1	9.9	8.6	3.2	2.8	3.4	7.0
RR 31	274.0	8.9	10.9	12.0	11.0	10.9	9.8	9.2	9.1
TRIBUTARY									
SH 13.2	428.9	10.0	11.5	11.4	10.9	6.6	4.5	8.1	8.4

* Values less than 5 mg/1 Standard are underlined

D. Nutrients

Untreated domestic sewage normally contains between 4 and 8 mg/l of phosphorus (P). Certain types of secondary treatment such as activated sludge can remove up to 30 percent of this phosphorus if operated properly. Total nitrogen in raw sewage is present in (concentrations of about 45 mg/l), predominantly the reduced state comprised of organic nitrogen (Org-N) and ammonia nitrogen (NH_3-N). Secondary treatment results not only in a change in form of these compounds to the oxidized nitrite-nitrate forms of nitrogen, but also in removal of up to 50% of the total nitrogen.

Nitrogen and phosphorus compounds (nutrients) are found in treated sewage. These nutrients, when discharged to a stream, can under proper environmental conditions stimulate excessive growths of algae.

Stream observations demonstrate the significance of the Fargo-Moorhead area as a nutrient source. Table V-6 gives the monthly average nutrient loads in the Red River at Station RR-9 upstream from the Fargo-Moorhead area and at Station RR-10 downstream from all Fargo-Moorhead effluents.

An average of the data for the entire survey period indicates an increase in the total phosphorus from 318 pounds per day at RR-9 to 1,128 pounds per day at RR-10 which is greater than a three-fold increase. The organic nitrogen increased from 798 pounds per day to 1,539 pounds per day and ammonia nitrogen increased from 252 pounds per day to 1,050 pounds per day. An increase from 481 pounds per day to 797 pounds per day was noted for nitrate nitrogen.

TABLE V-6

STREAM STATIONS
MONTHLY AVERAGE NUTRIENT LOADS AT SELECTED STATIONS
POLLUTION EVALUATION SURVEY
RED RIVER OF THE NORTH
SEPTEMBER 1969 - APRIL 1970

	STATION RR-9 (R.M.- 462.0)					STATION RR-10 (R.M. 441.0)				
		Load lbs/day					Load lbs/day			
MONTH	FLOW cfs	TP	ORG-N	NH_3-N	NO_3-N	FLOW cfs	TP	ORG-N	NH_3-N	NO_3-N
SEP.	64	172	372	3.4	3.4	78	2270	2010	861	378
OCT.	86	143	532	14	9.2	107	825	658	715	265
NOV.	120	155	291	13	6.5	143	770	809	462	324
DEC.	111	173	323	6.0	12	126	788	760	713	455
JAN.	154	298	380	249	174	167	810	755	791	504
FEB.	173	233	615	364	364	185	619	937	1260	369
MAR.	256	276	994	525	539	270	1075	2140	1860	902
APR.	598	1095	2870	838	2840	609	1870	4240	1740	3180
AVERAGE	-	318	798	252	481	-	1128	1539	1050	797

VI. DOCUMENTATION OF EFFLUENT CRITERIA VIOLATIONS

Table VI-1 gives a listing of the discrete data from Fargo's Sewage Treatment Plant which violates the effluent criteria established by North Dakota's Water Quality Standards. These criteria establish 25 mg/1 of biochemical oxygen demand (5-day at 20°C) and 30 mg/1 of suspended solids as maximum effluent concentrations on a daily average basis.

TABLE VI-1

TABLE OF STANDARDS VIOLATIONS
FARGO SEWAGE TREATMENT PLANT
POLLUTION EVALUATION SURVEY
RED RIVER OF THE NORTH
SEPTEMBER 1969 - APRIL 1970

Station	River Mileage	Date	Time	BOD_5 mg/l	Suspended Solids mg/l	Comments
Fargo STP Effluent	442.5	9/23	comp	56	49	North Dakota has no effluent criteria for coliform densities.
		9/25	comp	58	32	
		9/29	comp	28	42	
		9/30	comp	-	58	
		10/02	comp	40	40	
		10/06	comp	29	38	
		10/07	comp	34	34	
		10/09	comp	-	54	
		10/13	comp	50	46	
		10/14	comp	59	42	
		10/16	comp	70	40	
		10/20	comp	44	40	
		10/21	comp	46	40	
		10/23	comp	46	-	
		10/27	comp	49	48	
		10/28	comp	47	50	
		10/30	comp	105	48	
		11/03	comp	56	56	
		11/04	comp	53	42	
		11/06	comp	67	38	
		11/10	comp	40	32	
		11/11	comp	50	-	
		11/13	comp	66	50	
		12/01	comp	50	34	
		12/02	comp	47	-	
		12/04	comp	63	58	
		12/08	comp	64	48	
		12/09	comp	75	54	
		12/11	comp	96	72	
		12/15	comp	90	64	
		12/16	comp	85	56	
		12/18	comp	81	378	
		1/08	comp	88	68	
		1/12	comp	78	74	
		1/13	comp	100	64	
		1/15	comp	84	66	
		1/19	comp	71	74	

TABLE VI-1 (CONT.)

TABLE OF STANDARDS VIOLATIONS
FARGO SEWAGE TREATMENT PLANT
POLLUTION EVALUATION SURVEY
RED RIVER OF THE NORTH
SEPTEMBER 1969 - APRIL 1970

Station	River Mileage	Date	Time	BOD_5 mg/l	Suspended Solids mg/l	Comments
Fargo STP Effluent (Cont.)	442.5	1/20	comp	85	60	
		1/26	comp	66	100	
		1/27	comp	70	60	
		1/29	comp	71	76	
		2/02	comp	76	76	
		2/03	comp	92	84	
		2/05	comp	90	82	
		2/23	comp	68	88	
		2/24	comp	75	84	
		2/26	comp	67	82	
		3/02	comp	72	64	
		3/03	comp	54	86	
		3/06	comp	-	70	
		4/06	comp	75	50	
		4/07	comp	92	72	
		4/08	comp	77	64	

MR. HEGG: I will proceed with the summary statement. The first topic is

INTRODUCTION

A Federal-State conference (Conference in the Matter of Pollution of the Interstate Waters of the Red River of the North, Minnesota-North Dakota, September 14, 1965, January 18, 1966, and March 4, 1966) was held to examine the matter of pollution on the Red River of the North. One significant conference finding was the occurrence of reduced dissolved oxygen concentrations. The recurring incidents of depressed oxygen levels in the Red River of the North between Fargo and Grand Forks, especially during periods of ice cover, resulted in the initiation of an additional field investigation by the Federal Water Quality Administration in cooperation with the States of North Dakota and Minnesota during the period September 1969 through April 1970.

This field survey was designed to determine the impact of waste sources in the Fargo-Moorhead area on the quality of the Red River of the North. The study area encompassed that portion of the river from Fargo-Moorhead to Oslo, Minnesota, which is 25 miles downstream from Grand Forks, North

Dakota.

The survey effort provided data for answering the following questions:

1. What is the general quality of the water in the river downstream from the metropolitan areas and does this quality conform with the accepted water quality criteria as delineated in Federal-State Water Quality Standards?

2. What are the relative waste contributions from the major waste sources in the Fargo-Moorhead area?

3. What is the overall performance level of the waste treatment plants at Fargo and Moorhead, particularly during ice cover on the river which is considered the most critical period?

In answering these questions, a portion of the survey consisted of a detailed investigation of the Fargo Sewage Treatment Plant. It is the purpose of this statement to outline the specific 1969-1970 survey findings that pertain to Fargo, North Dakota.

(The slides shown during the following commentary are marked Exhibit 1 and are on file at the FWQA Headquarters in Washington, D. C., with a copy on file at the FWQA Regional

Office in Kansas City, Missouri.)

MR. HEGG: METHOD OF STUDY The 1969-1970 survey included that portion of the Main Stem of the Red River of the North from river mile 274.0 at Oslo, Minnesota, to river mile 462.0 just upstream from the Fargo-Moorhead Area. The study area and sampling locations are in this first figure. Intermediate stream sampling stations are located at these points (indicating). Here is Grand Forks.

The next slide shows a larger scale map of the Fargo-Moorhead area, showing our upstream station, called RR-9, above all Fargo-Moorhead outfalls. This (indicating) is the downstream station, called RR-10, below all Fargo-Moorhead outfalls. Here (indicating) is the Fargo-Moorhead Sewage Treatment Plant which discharges to the river at this point.

Lights, please.

A. General Description

The pollution evaluation survey of the Red River of the North was conducted from September 1969 through the first week in April 1970. This time schedule was selected so that the seasonal changes during this period, especially under ice cover, could be monitored. Laboratory facilities were provided by the Civil Engineering and Microbiological Departments of the North Dakota State University. Samples were collected at thirteen stations spread over 182 river miles and from all known waste sources in the Fargo-Moorhead area. Visual observations were made between sampling intervals to maintain survey continuity.

B. Sampling Schedule and Collection

Samples taken from the wastewater treatment plants were composited on a two-hour basis for a 24-hour period. These composites were collected for analysis three times a week. Analyses made on the composites included: chlorides, turbidity, conductivity, suspended solids, pH, and 5-day biochemical oxygen demand at 20°C.

The next topic I would like to discuss is

DATA PRESENTATION

A. Fargo Sewage Treatment Plant

Throughout the 1969-1970 survey period, the known waste discharges in the Fargo-Moorhead Area were monitored. A summary of the results from Fargo's Sewage Treatment Plant is outlined as follows:

Fargo, North Dakota, is served by a secondary sewage

B. Hegg

treatment plant consisting of primary clarifiers, two trickling filters operated in parallel, chlorination for disinfection and final clarification. During the 1969-1970 survey period, composite samples were taken of the influent and chlorinated effluent. Table 5-1 shows the results and analyses on a monthly average basis for the 5-day 20°C biochemical oxygen demand various months during the survey period. Here is the influent concentration of biochemical oxygen demand to the Fargo Treatment Plant. Here is the effluent concentration on a monthly average basis leaving the treatment plant which is discharged to the Red River of the North. Here is the percentage reduction of the biochemical oxygen demand for the various months, the flow to the plant in million gallons a day. This is the loading to the stream in pounds of biochemical oxygen demand per day, and the population equivalents discharged to the stream in persons per day.

Table 5-2 shows the results and analysis on a monthly average basis for the total suspended solids. It is very similar to the previous table. Here are the months, the total suspended solids in the influent, total suspended solids leaving the plant in the effluent, percentage reduction of total suspended solids, the flow to the plant in million gallons per day, the pounds of total suspended solids discharged to the Red River of the North, and what this is in population equivalents.

The percentage reduction by the treatment plant of biochemical oxygen demand is plotted on a monthly basis in Figure 5-1. This figure shows a decreasing trend in the percentage reduction of BOD from 79 percent in November to 44 percent in April. The percentage reduction by the treatment plant of total suspended solids is plotted on a monthly basis in Figure 5-2.

This figure shows the same decreasing trend for total suspended solids. The percentage reduction goes from 88 percent in October to 52 percent in April.

May I have the lights, please.

The reduction in percentage removals from the fall to the winter months results from the decreased effectiveness during colder temperatures of the biologically dependent secondary treatment process.

The low percentage reductions in March and April are believed to be due to the effect of combined sewers which receive storm water and surface runoff in addition to sewage. The effect of these sewers is to increase the hydraulic loading while decreasing by dilution the strength of the sewage entering the treatment plant. This was shown by the BOD and total suspended solids concentrations in March and April. The final effect of the higher flows and decreased strength of the sewage was the lower percentage reductions in March and April.

The decreased removals result in an increase in the pounds of the biochemical oxygen demand and the pounds of total suspended solids discharged to the Red River. The biochemical oxygen demand, BOD, discharged increased from a low of 1,983 pounds per day in September to a high of 3,492 pounds per day in January. The pounds of total suspended solids discharged also increased from 1,730 pounds per day in September and a low of 1,597 pounds per day in November to a high in March of 3,628 pounds per day. Monthly average influent concentrations of BOD and total suspended solids remained relatively constant except for the decreased concentrations in March and April. The influent concentrations are about average for a typical domestic sewage.

Monthly average effluent concentrations of the

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samples taken always exceeded North Dakota's effluent criteria of 25 milligrams per liter BOD and 30 milligrams per liter of total suspended solids.

DATA PRESENTATION

B. Waste Discharges in the Fargo-Moorhead Area

Throughout the 1969-1970 survey period known waste discharges in the Fargo-Moorhead Area were monitored. From these results the waste contributions from these sources were determined. The monthly average pounds of BOD per day discharged to the river ranged from a low of 4,203 pounds per day in March to a high of 44,241 pounds per day discharged during October. The monthly average pounds of total suspended solids per day discharged varied between a low of 4,062 pounds per day in April to a high of 27,090 pounds per day in November.

Table 5-3 gives the monthly percentage contribution from each waste source for the biochemical oxygen demand load. Fargo was the major contributor during January, February, March and April, contributing 43 percent, 61 percent, 82 percent, and 73 percent of the monthly average pounds of biochemical oxygen demand per day discharged.

Table 5-4 gives the monthly percentage contribution

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from each waste source for the total suspended solids load. Again, Fargo was the major contributor during January, February, March and April, contributing 57 percent, 64 percent, 61 percent and 65 percent of the pounds of the monthly average of total suspended solids discharged per day.

The next topic under Data Presentation is Stream Stations.

Table 5-5 shows the monthly average values for dissolved oxygen for the various stream stations. Those values of D.O. less than the 5 milligrams per liter State-Federal standards for the Red River of the North are underlined in the table.

January and February and March shows three stream stations, four stream stations, and two stream stations, respectively, with less than 5 milligrams per liter dissolved oxygen contained in the river.

When the river becomes covered with ice, the addition of oxygen through natural aeration and algae photosynthesis ceases. The impact of the waste from the Fargo-Moorhead Area when ice limits the supply of oxygen is reflected in the low monthly average D.O. values during January, February and March.

It is noted that during January, February, March and April Fargo was the major waste contributor in the Fargo-Moorhead Area.

Could I have the lights, please, again.

The bacterial quality of the stream was measured by the total and fecal coliform content during October and November of 1969 and again in January 1970. The total coliform concentrations exceeded the 5000 MPN/100 ml standard, Federal-State standard, at many of the stream stations. However, Fargo's effluent never exceeded a concentration of 5000 MPN/100 ml during the survey period, indicating effective chlorination. However, during a visit to Fargo's plant by FWQA personnel on June 3, 1970, it was noted that no chlorine was being added to the effluent nor was any chlorine available at the plant.

The next topic is Data Presentation, Section D, Nutrients.

Untreated domestic sewage normally contains between 4 and 8 milligrams per liter of phosphorus. Certain types of secondary treatment, such as activated sludge, can remove up to 30 percent of this phosphorus if operated properly. Total nitrogen in raw sewage is present in predominately the reduced

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state, comprised of organic nitrogen and ammonia nitrogen. Secondary treatment such as Fargo's results not only in a change in form of these compounds to the oxidized nitrite-nitrate forms of nitrogen, but also in removal of up to 50 percent of the total nitrogen.

Nitrogen and phosphorus compounds, all nutrients, are found in treated sewage. These nutrients, when discharged to a stream, can under proper environmental conditions stimulate excessive growths of algae.

Stream observations demonstrate the significance of the Fargo-Moorhead Area as a nutrient source. Table 5-6 gives the monthly average nutrient loads in the Red River at Station RR-9 and at Station RR-10. RR-9 is immediately upstream from the Fargo-Moorhead Area. RR-10 is downstream from all Fargo-Moorhead effluents.

An average of the data for the entire survey period--this is supposed to be average; it is a little blurred. The average values for the entire survey period, the entire eight months, for the various constituents, total phosphorus, organic nitrogen, ammonia nitrogen, nitrate nitrogen, are listed in the table.

The table indicates an increase in the total phosphorus from 318 pounds per day at RR-9 to 1,128 pounds per day at RR-10, which is greater than a threefold increase. The organic nitrogen increased from 798 pounds per day to 1,539 pounds per day.

And ammonia nitrogen increased from 252 pounds per day to 797 pounds per day.

MR. RADEMACHER: Correction on that, Bob. It is 1,050.

MR. HEGG: Excuse me, 1,050. Wait, I read the wrong one here. The ammonia nitrogen increased from 252 pounds per day to 1,050 pounds per day and the nitrate nitrogen increased from 481 pounds per day to 797 pounds per day.

The next topic I would like to discuss is Documentation of Effluent Criteria Violations.

Table 6-1, which is presented on the following two slides, gives a listing of the discrete data from Fargo's Sewage Treatment Plant which violates the effluent criteria established by North Dakota's water quality standards. These criteria establish 25 milligrams per liter of biochemical oxygen demand and 30 milligrams per liter of suspended solids as maximum effluent concentrations on a daily average basis. The table indicates the frequency of these effluent criteria violations.

This is the station sampled, the Fargo Sewage Treatment Plant effluent, located at river mile 442.5. These are the dates the samples were composited. Under "time" here it indicates that the sample was a composite over a 24-hour period. This is the biochemical oxygen demand concentration in milligrams per liter and lists all those values which exceeded the 25 milligrams per liter criteria adopted by the State of North Dakota. This is the suspended solids concentration listing all those values exceeding the 30 milligrams per liter criteria adopted by the State of North Dakota. It is noted here that North Dakota has no effluent criteria for coliform densities, so this column will not contain any numbers.

This is a continuation of that table throughout the survey period up to April showing the same, those values that again exceed the effluent criteria.

Could I have the lights, please.

The next topic I would like to discuss is Summary and

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Conclusions.

A pollution evaluation survey was conducted on the Red River of the North from September 1969 to April 1970. The survey provided answers to several questions concerning pollution of the river.

Determination of the various seasonal waste contributions was accomplished. The total pounds of biochemical oxygen demand discharged from the Fargo-Moorhead area during the survey period ranged between a low of 4203 pounds of biochemical oxygen demand per day in March to a high of 44,241 pounds of biochemical oxygen demand per day in October. The contribution of each major waste source in the Fargo-Moorhead Area to the total BOD load was determined. The quantity of wastes from Fargo, North Dakota, steadily increased as the efficiency of the plant declined during winter months, with Fargo contributing a peak of 82 percent of the total organic waste load discharged from the Fargo-Moorhead Area in March.

The combined waste discharges from the Fargo-Moorhead Area had an adverse effect on the water quality of the Red River of the North. Numerous violations of Federal-State Water Quality Standards occurred during the 1969-1970 survey period.

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These included violations of the dissolved oxygen criteria, the bacterial criteria and violation of State effluent requirements.

Specific conclusions that pertain to the Red River of the North within the study area and to Fargo's plant are outlined as follows:

A. The Red River of the North from Fargo, North Dakota, to Oslo, Minnesota.

1. The critical period for maintaining 5 milligrams per liter of dissolved oxygen in the Red River of the North was during winter months under conditions of ice cover. Monthly averages of dissolved oxygen concentrations less than 5 milligrams per liter were determined by samples selected from the Red River at three stream sampling stations in January, four stations in February, and two stations in March.

2. Waste sources in the Fargo-Moorhead area contributed abundant quantities of nutrients to the Red River of the North, including nitrate-nitrogen and total phosphorus.

B. Fargo, North Dakota.

1. The decreasing efficiency of removal of biochemical oxygen demand and total suspended solids by Fargo's Sewage

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Treatment Plant brought on by severely cold weather resulted in increased waste loads being discharged to the river, adversely affecting the dissolved oxygen levels.

2. Monthly average effluent concentrations of the samples taken always exceeded North Dakota's effluent criteria of 25 milligrams per liter of biochemical oxygen demand and 30 milligrams per liter of total suspended solids.

3. Fargo was the major contributor of biochemical oxygen demand and total suspended solids discharges to the Red River from the Fargo-Moorhead Area during the months of January, February, March and April, contributing from 43 to 82 percent of the monthly average pounds of BOD per day discharged and from 57 to 65 percent of the pounds of the monthly average of total suspended solids per day discharged.

4. Fargo's disinfection facilities provided sufficient bacterial removals to meet the effluent criteria during the survey period. However, it was noted by visitors to the plant on June 3, 1970, that no chlorine was being added and none was available at the plant.

The final topic will be the Recommendations.

Those recommendations, based on the survey and a subsequent visit to the area, that apply to Fargo, North Dakota, are given as follows:

1. Continuous disinfection should be provided for all wastes discharged from the City of Fargo.

2. The treatment facilities should be operated to effect the maximum practical reduction of nitrogen and phosphorus.

3. Wastes from the City of Fargo must be provided sufficient treatment to avoid damaging waste loads being discharged to the Red River, particularly during the critical winter months.

Mr. Chairman, this concludes the Federal statement.

MR. STEIN: All right.

Are there any comments or questions?

MR. GEBERT: One question. What is--

MR. STEIN: Wait a minute. We have to make a record. You had better identify yourself.

MR. GEBERT: O.K. Chet Gebert of The Forum. Just a question.

MPN, what is MPN?

MR. HEGG: MPN is a method of determining the coliform densities.

MR. STEIN: Why don't you tell him what MPN means?

MR. HEGG: Most probable number. It is a statistical term.

MR. STEIN: All right. Here, this is a very funny field and let me give you the explanation. For a field as dirty as this, they surely have an antiseptic vocabulary. (Laughter)

But I think, at least in this paper or in this analysis, it is fair to say that most of the terms used, at least the measures used, are the ones commonly accepted by the profession. Sometimes some of these fellows use a new technique and they come up with something new, but these are terms that are in constant use by the engineers, biologists, chemists, microbiologists in the profession.

I think, Mayor, in a sense you are lucky, because I am reminded of a phrase in an early George Orwell novel, when he said, "Blessed are those with identifiable diseases." What we are dealing with here is really garden variety organic pollution which is amenable to treatment and can be described in the ordinary garden variety jargon of the profession.

I am working, as some of you may probably know, in some other areas with mercury and toxic material, heat coming into water, radiation, and when you deal with that and you have problems such as that, you really have some tough problems.

So I think while some of these terms might be a little foreign to you, from all of these terms there is a number which is desirable. Just look at the number and see if the number is higher or lower to see if it is met. O.K.

Are there any other comments or questions?

I have a few. First, I am not sure I quite understand what you have said on your conclusion No. 2. You talk about increasing efficiencies during cold weather months, but then you say monthly average effluent concentrations of the samples taken always exceeded North Dakota's effluent criteria. Does that mean just in the winter months or all year round?

MR. HEGG: Throughout the entire survey period.

MR. STEIN: And that includes summer months as well?

MR. HEGG: Right. Well, we weren't there in the summer. From September--

MR. STEIN: Well, someone must have been there on June 3, 1970.

MR. HEGG: But we were not sampling at that time.

MR. STEIN: In other words, this just applies to your winter months?

MR. HEGG: Right.

MR. STEIN: All right.

MR. HEGG: Well, it also applies to September, October.

MR. STEIN: Go on.

MR. VAN HEUVELEN: I would like to ask a question. In the four citations in the Secretary's letter, Chairman Stein, one of those under Minnesota standards says, "Coliform group organisms must not exceed 5,000 most probable number per 100 ml." This letter is dated May 19th. And yet in the data presented up to May 19th, FWQA's surveys had shown no violation of coliform standards by the City of Fargo.

The only evidence is something noted June 3rd, and I think maybe we owe Mr. Ken Ruby, Superintendent of the Fargo Sewage Plant, a chance to explain why they may have had an emergency on June 3rd.

MR. STEIN: That is right.

MR. VAN HEUVELEN: It seems to me that this citation has not been substantiated.

MR. STEIN: Do you care to comment on that?

MR. HEGG: That is true, that Fargo's coliform concentrations did not exceed the 5,000 MPN per 100 ml. However, Fargo did have coliform concentrations in their effluent. They also contributed nutrients to the Red River of the North in their effluent. And the combination of the two when they arrive in the stream can cause after growth to occur, increasing the concentrations in the stream to greater than 5,000 MPN per 100 ml.

MR. STEIN: All right, do you have any further comment? I think that speaks for itself. O.K.

I don't know if Mr. Ruby or anyone wants to comment on that chlorine or do you just want to let that stand?

MR. RUBY: No, I would make the comment that we did run out, probably within a half an hour of the time that Mr. Hegg and Mr. Rademacher were at the plant.

MR. STEIN: Come up here, Mr. Ruby.

MR. RUBY: I would only comment on the June 3 situation that when I showed Mr. Hegg and Mr. Rademacher our sewage treatment plant, that the chlorinator had run out, as near as we could tell, less than a half an hour prior to this time. We did that afternoon bring a cylinder from the water plant to the sewage plant, so that we were not chlorinating our effluent a matter of probably less than three hours and certainly not more than four hours.

In defense of the chlorinated effluent, I don't think that the City should have received a citation of a violation of this. Over the last 11 months we have run over 600 samples and the average coliform organisms per 100 milliliter in our effluent, I believe, if I remember my figures correctly, is 233, and this is far, far below any effluent standard that has been set.

MR. STEIN: Yes. Let me ask you a question. I am sure I know the answer.

It is not because it was the end of the fiscal year that you ran out of chlorine?

MR. RUBY: No, certainly it was not.

MR. STEIN: This has happened at some places, you know. (Laughter) They chlorinate fine and then the last month or two is out. This has been one of the problems, I know, that is why I asked the question, that has plagued some places in the past in waste treatment and has been one of the arguments against chemical treatment. That is, when you have a payroll and you are tight, the tendency is not to cut people off, because obviously they are humans and they are working and they have families to support, but the tendency is to cut down on the chemicals that you use.

Is it fair to say that except for this instance, which appears to be one of these things that happen, you know, in the best-run operations, that the chlorinator does work properly? I have never seen a plant or an automobile that didn't have problems at some time or another. If I never ran out of gas, I would be critical, too, sometimes.

MR. RADEMACHER: I would say this, Mr. Stein, that this was an unfortunate incident as far as Mr. Ruby was concerned, particularly at the time of our visit, that this happened. But I think it points up the need, in terms of operation, to be aware of what your inventory is so that these occasions do not happen. And I think that is the only purpose for citing it.

MR. STEIN: Right. But I would ask you to consider this, and I don't want to preclude this, but at least at the end can we come, possibly, to an agreement that as far as we know from the State records and Mr. Ruby's testimony and your observation, aside from this one time, Fargo was providing adequate chlorination and disinfection?

MR. VAN HEUVELEN: And this one time was after the citation.

MR. STEIN: Yes, right.

MR. RUBY: I would like to ask Mr. Hegg how he arrived at the percentage of BOD loading that Fargo was putting in the river, what he used for 100 percent?

MR. HEGG: I think that was qualified as a percentage of the BOD load from the Fargo-Moorhead area, and I stated also earlier that we sampled all known waste sources in the Fargo-Moorhead area so the results from these waste sources, all known waste sources in the Fargo-Moorhead area, comprised 100 percent.

MR. RUBY: Were you assuming that the only two waste sources that are permitted to discharge under ice cover were the only ones discharging?

MR. HEGG: No. All waste sources were outlined in that table. I think there were four listed.

MR. VAN HEUVELEN: Would you name those, please?

MR. HEGG: Fargo Sewage Treatment Plant, Moorhead Sewage Treatment Plant, discharges from American Crystal Sugar's outfall, and the Second Avenue South lift station, which was bypassing from the City of Moorhead.

MR. STEIN: Are there any other comments or questions?

I have one last one. In your last recommendation, and I think this is a key one, at least for me, you say, "Wastes from the City of Fargo must be provided sufficient treatment to avoid damaging waste loads being discharged to the Red River, particularly during the critical winter months."

The question that I have is, is their existing trickling filter plant capable of doing this or do they need additional facilities?

MR. HEGG: I think that Mr. Ruby pointed out how well the chlorination facilities are. On visiting the plant, the plant is, at least it appears to be, operated as well as it can be. They did not meet them this winter; they have not met them in the past. I do not believe that the present facilities would be adequate.

MR. STEIN: In other words, you believe that additional facilities are needed?

MR. HEGG: Yes.

MR. STEIN: All right. If this is the case, and I ask everyone to consider this--and I think, gentlemen, this may be the crux of the operation of what we are doing here today--if this is the case and additional facilities are needed, we should have a pretty good idea of where we all stand on this, because I am certain that this will be the question that I am going to be asked when I get back to Washington.

I don't want to minimize this and lull anyone into a sense of false security here, because you are under 180-day notice and unless I come back with a report that satisfies the Secretary, the next step is filing a court action. I think, considering the attitude that we have had from the Fargo officials, and particularly Mayor Lashkowitz through the years, this would be a tragedy, because we have worked together with you on a cooperative basis and I hope I can get some kind of answer to that question that makes some kind of sense.

With that, let us recess and have some coffee in the back.

(RECESS)

MR. STEIN: Let's reconvene.

I have been asked to make a few remarks about the significance or the meaning of the 180-day notice.

This notice is related to an alleged violation of water quality standards. The standards were developed by the States, Minnesota and North Dakota, sent to the Secretary of the Interior for his approval. When he approves them, they become Federal as well as State standards. Any violation of the standards is subject to abatement under Federal law.

The first step in this is the sending of a notice to the alleged violator. This was done with the City of Fargo in a letter dated March 19. I don't know when our receipt was, the 21st? May 19, they received it the 21st?

MR. RADEMACHER: Yes.

MR. STEIN: The 21st. That means the 180 days runs from the 21st of May.

Now, we by statute can ask the Attorney General to institute a suit against the City of Fargo after that 180-day period if we do not within that period come forward with the City and the State with a satisfactory agreement through voluntary negotiation to come up with conclusions which will abate the pollution and hopefully be equitable to all. This does not mean that the works have to be completed, necessarily, at the end of the 180-day period, because in some cases, particularly in public construction, this would be obviously impossible. The 180-day period is designed to give the State, the discharger, and us an opportunity to get together.

In order to formalize this, the Secretary by regulation has directed that we have an informal hearing such as this to put it on the record and give everyone a chance to do this. We will hope that this will result in this case.

By the way, we have had many 180-day notices before this, and so far I think our batting average is 100 percent. We haven't had to refer one to court. And we have had some of these 180-day notices with some big cities, such as Toledo, and I think this is on the public record so I will give you the names, the biggest paper company in the world, International Paper, United States Steel, Republic Steel, so forth. And we have come to agreements with all of them.

I hope we can come to an agreement here. But this is just to put it into perspective to indicate what that 180-day notice means.

With that, may we call on North Dakota. Mr. Van Heuvelen.

W. VAN HEUVELEN, EXECUTIVE OFFICER AND
CHIEF SANITARY ENGINEER
NORTH DAKOTA STATE DEPARTMENT OF HEALTH
BISMARCK, NORTH DAKOTA

MR. VAN HEUVELEN: Thank you, Chairman Stein.

Just a few remarks before Mr. Norm Peterson reads the statement for the State of North Dakota.

The North Dakota State Department of Health is the official pollution control agency for the State, and this not only includes the laws governing water pollution control in the State of North Dakota, but also air pollution, solid waste, radiological health, injury control, institutional engineering and sanitation, and, of course, general sanitation. In the field of water pollution, we have been involved in surveys and work on the Red River since the late 1930's. In fact, I think one of the first water pollution surveys and reports in the country was developed on the Red River back in 1938. Certainly we are pleased with the progress that North Dakota has made in pollution control. By the end of this summer we will have 100 percent of the cities in North Dakota having waste treatment and well over 90 percent of these were having adequate waste treatment.

Our statement on behalf of the North Dakota State Department of Health will be presented by Mr. Norman Peterson, who is Director of our Division of Water Supply and Pollution Control.

NORMAN PETERSON, DIRECTOR
DIVISION OF WATER SUPPLY AND POLLUTION CONTROL
NORTH DAKOTA STATE DEPARTMENT OF HEALTH
BISMARCK, NORTH DAKOTA

MR. PETERSON: Thank you, Van. And Commissioner Stein.

This is a statement prepared by the North Dakota State Department of Health for the hearing in Fargo relative to the pollution of the Red River of the North.

North Dakota adopted Water Quality Standards in the spring of 1967. These standards were submitted to the Federal

Water Quality Administration for their approval, which was given in August 1967. However, approval of the standards for the Red River of the North was withheld until the Department of the Interior could determine compatibility between the standards drawn up by both Minnesota and North Dakota for this basin.

Representatives from the North Dakota and Minnesota Water Pollution Control agencies and the Federal Water Quality Administration met and worked out details for changes that would be agreeable to all concerned. Prior to holding a public hearing for standards change, the suggested amendments were sent to the Federal agency for comment. Several changes were made at their request. North Dakota then called a public hearing in the early fall of 1969 for the purpose of amending the State's Water Quality Standards. The amended standards were approved by the State Health Council and the State Water Pollution Control Board on September 26 and December 15, 1969, respectively, and were immediately sent to the Federal Water Quality Administration requesting their approval. This approval was granted by Mr. Hickel, Secretary of the Interior, on May 22, 1970.

N. PETERSON

The North Dakota program plan for fiscal 1968 for water pollution control was signed by Governor Guy on July 11, 1967, and approved by the Federal Water Quality Administration of the Department of the Interior on October 6, 1967. This plan included a program for implementation of the State's adopted Water Quality Standards. Stream monitoring, outlined in the State Plan, began in the spring of 1968. Since July of 1968, this sampling program has been in full accordance with the approved plan.

There are 29 stations on various rivers within the State which the Department monitors routinely on a scheduled basis. Two of these stations are most directly related to the problem of stream water quality in the stretch of the Red River below Fargo. These are our stations south of Grand Forks near Thompson, North Dakota, and the station at the bridge on Minnesota Clay County Highway No. 22. This same station is designated as RR-10 on the Federal Survey.

The results of our sampling at these monitoring stations show that at the Grand Forks station the river, over a two-year period, was in violation of dissolved oxygen criteria once. The sampling date was January 30, 1970. This is the only violation of this criteria we have recorded from our sampling program for the past two years. Excessive coliforms were noted at this station on May 2, 1969, on May 29, 1969, and on August 22, 1969. All other samples were in compliance.

At the Fargo station, dissolved oxygen criteria was noted to be in violation at only one sampling run. This was September 16, 1969. Thirteen out of twenty-two monthly samples were found to be in violation of the total coliform criteria.

It should be pointed out that these stations are sampled only once per month. The department recognizes that more frequent sampling runs should be conducted to provide better monitoring of the river quality. However, budgetary considerations limit the Department's monitoring program. The Department also wishes to point out that in no way whatsoever is the Department questioning the results of the sampling and survey conducted by the Federal Water Quality Administration.

The City of Fargo has been sending operational reports to the State Health Department since January of 1969. Previous to this, our laboratory chemist had checked out the laboratory procedures used by the City of Fargo technicians at their sewage treatment plant. They were found to be satisfactory and in accordance with Standard Methods.

The City of Fargo operating reports, substantiated by the Federal Water Quality Survey reports on their sampling of the effluent from Fargo's waste treatment plant, do not show a single violation of stream coliform standards by the effluent from Fargo's plant. However, the Federal Water Quality Administration Survey does show rather consistent violations of the coliform standards by discharges from American Crystal Sugar Company, the Moorhead waste treatment plant, and the bypassed wastes from a lift station in Moorhead. This would also account for the coliform violations that North Dakota found in our sampling runs at the station north of Fargo-Moorhead. All of the above discharges are from the Minnesota side of the river. We trust that someone will be taking appropriate action to correct this matter.

The North Dakota State Department of Health does not have any evidence nor do we know of any instance of any recent untreated domestic sewage discharged by the City of Fargo into the Red River. The last time this occurred was during the major flood at Fargo during the months of April and May of 1969 when the City was forced to shut down two or three of their outlying lift stations. However, their master lift station and the plant was kept in service. It is noted that the Federal Water Quality Administration Survey reveals that a lift station in Moorhead was bypassing wastes to the river in December of 1969 and continued such discharge well into January of 1970.

The North Dakota State Department of Health recognized that the City of Fargo was not meeting the effluent BOD criteria which had been established in the adopted Water Quality Standards for the Red River. This was evident from the operating reports submitted to the Department by the City and also from the reports on the survey of the Federal Water Quality Administration which we began receiving in the late fall of 1969. Consequently, the Department contacted the City Superintendent relative to this matter and on Friday, April 17, met with Mr. Kenneth Ruby, the City Superintendent of Water and Waste Facilities, and Mr. O. Olson of the Kansas City office of the Federal Water Quality Administration. Discussed at this meeting were various steps the City could take to improve treatment, especially during the cold weather season when plant efficiency was seriously affected. Also discussed was the possibility of the City making application for a research and development grant, as there is a need for investigations into the problem of improving cold weather operations of trickling filter waste treatment plants.

It is not the philosophy of the North Dakota State Department of Health to issue formal orders to a violator unless such violator indicates he does not intend to cooperate with our agency. In this instance, the City of Fargo acknowledged that they were not meeting the standards, assured us they would take the necessary steps, and asked for our assistance with their problem.

The North Dakota State Department of Health is certainly concerned about maintaining the dissolved oxygen criteria in the Red River at all times, and it is our intention to be assured that the City of Fargo does take the necessary steps to comply with the effluent standards. However, we are also of the opinion that the dissolved oxygen standards for the river will not be met, even though the City of Fargo does comply, if other waste discharges in the area are permitted to continue. This is certainly brought out by the Federal Water Quality survey report for the period from September 25, 1969, through

October 31, 1969. It was during this period of the study that the stream water quality was most consistently in violation of the adopted Water Quality Standards. And this refers to the dissolved oxygen. Of the 20 days during this period that samples were taken by the Federal agency, 14 showed violation of the dissolved oxygen criteria. But for 8 out of these 14 days that dissolved oxygen violations occurred, the violation had already occurred at Station No. 9.6, which is located above the Fargo treatment plant discharge point, but below the discharge points of the American Crystal Sugar Company, the Moorhead Waste Treatment Plant, and the bypass from the Moorhead lift station. Therefore, the only conclusion that we can draw is that the dissolved oxygen criteria for the river would have been violated for 8 days during this period even if the City of Fargo had withheld all of its treated wastes from the stream. Thus, it is the firm opinion of the North Dakota State Department of Health that the responsibility for the violation of the dissolved oxygen standards in the Red River at this point must be shared by the American Crystal Sugar Company, the City of Moorhead from their waste treatment plant and their lift station bypass, and the City of Fargo.

N. PETERSON

May we respectfully refer back to the summary and recommendations of the 1965 "Conference Meeting in the Matter of Pollution of the Interstate Waters of the Red River of the North." At this meeting the following recommendations were made regarding pollution control activities that were to be taken by the State of North Dakota and municipalities in the basin contributing to pollution problems in the Red River.

1. The City of Fairmount was to install adequate treatment. This has been accomplished. The treatment facility is now in operation.

2. The City of Fargo was to install equipment to chlorinate their waste discharges. This has been accomplished and the City has been adequately chlorinating their wastes for the past year.

3. The City of Mayville was to either replace or improve their treatment facilities. This has been accomplished. The City has in operation a new secondary treatment plant. They have been experiencing some operating difficulties but we have been working with the City, in cooperation with representatives from the Kansas City office of the Federal Water Quality Administration, and we

hope to solve the City's difficulties in the near future.

4. The Industrial Complex north of the City of Grand Forks was to either provide their own adequate treatment or connect to the City of Grand Forks system. All industries are now connected to the city system and the City of Grand Forks is presently completing very extensive additions to their facilities to more adequately handle these wastes. The major industries are pretreating their wastes before entering the City's system.

5. The City of Walhalla was to install satisfactory treatment facilities. This has been accomplished and the facility is now in operation.

Thus, all of the recommendations coming out of the 1965 Conference Meeting have been accomplished. This is an indication that the State of North Dakota and its municipalities, in good faith, recognize their responsibilities and do take action in the control of water pollution.

MR. STEIN: Thank you very much.

Are there any comments or questions?

MR. RADEMACHER: I would like to make one comment, Chairman Stein.

You made the point about the monitoring program, and it looks like we are going to have to work closer together in getting a monitoring system that is a little more responsive to the problems in the river. As you know and have mentioned, the budgetary problems are probably the dominant ones. But it is not as sensitive as it should be and I think that that is a point that has to be made.

MR. PETERSON: This is true. And like you say, you have promised us an automatic monitor and the Minnesota plant will install one between Fargo-Moorhead, so they will be taken care of.

MR. STEIN: This is very good.

I notice you read about the City of Walhalla. I thought that was the way you pronounced it, but now I realize you spell it the same. (Laughter)

I would like to make one comment on the American Crystal Sugar and the Moorhead situation.

I have recommended to the Commissioner of the Federal Water Quality Administration that abatement action be taken by the Secretary against these two sources just as against Fargo. The Commissioner has ordered an investigation of this recommendation and an announcement will be forthcoming shortly.

Are there any other comments or questions on this?

TELEVISION CAMERAMAN; Sir, would you repeat your statement that you just made?

MR. STEIN: All right.

I have recommended to the Commissioner of the Federal Water Quality Administration that the Secretary of the Interior take abatement action against the City of Moorhead and the American Crystal Sugar Company just as we have done against the City of Fargo. The Commissioner has ordered an investigation and an announcement will be forthcoming shortly.

Are there any other comments or questions on this entire matter or does anyone want to say anything now? Because I think I would like to elicit comment from either the City of Fargo or the State or anyone else of what we are going to do about that key question, and that is to improve the operation of the Fargo plant or, to put it another way, from the Federal interest, to reduce the BOD loadings into the Red River of the North from sources in Fargo during the winter months particularly.

MR. MARKEY: I think Mr. Ruby, Commissioner Stein, will be our spokesman for what his plans are.

MR. STEIN: Right.

Mr. Ruby.

KENNETH RUBY, SUPERINTENDENT
WATER AND SEWAGE UTILITIES
FARGO, NORTH DAKOTA

MR. RUBY: There are three recommendations that the City of Fargo should do.

No. 1, continuous disinfection should be provided for all waste discharged from the City of Fargo. I would assure the Federal Water Quality Administration at this time that this is now being complied with and short of conditions beyond our control it will continue to be complied with in the future.

As far as the Recommendation No. 2 and No. 3, as Mayor Lashkowitz said in his opening statement, we not only have tried to comply with all regulations in the past, but we are intending to in the future. We have retained consultants to help us in solving the problem so that we can meet the effluent and river quality standards.

We do, before 180 days are up, intend to have preliminary plans so that the Federal Government can know what we intend to do. We do intend and hope to come in agreement with the Federal Water Quality Administration on what we are going to do to solve this problem.

Just what form of treatment this is going to take, I really can't say at this time. We are quite certain that our present secondary treatment plant cannot meet the standards in periods of cold weather, and I am assuming at this point that it will be some form of tertiary treatment. Which form I cannot say at this time.

But the City of Fargo, I assure you, does intend to comply. We do intend to have specific plans in order prior to the 180-day period.

MR. STEIN: I wonder if we can zero in. I hate to push this, but we have had one case where we went right down to the wire on the 180-day period and that was involving a major steel company. I don't recommend that process to anyone.

I wonder if we can think of a plan where State people and the Federal people and the City people get together with a plan for improvement which will give us a little bit of leeway before that period is up, because if you wait until the last day you know what happens--the machinery goes into motion.

I would suggest, is it possible to set a deadline for the people to work with you and to get these plans in, say, a month before that 180-day period? When would that be?

MR. RUBY: It is roughly the middle of November, I believe.

MR. PETERSON: Yes.

MR. STEIN: November 21.

MR. RUBY: I might add in this regard, in preliminary discussions with our consultant, his schedule called for 180 days for the preliminary plans, 20 days for the City to accept them, which would leave us roughly two months to come into agreement with the Federal Government, but we have already lost part of that time.

So hopefully we can shorten the 180-day period up with our consultants.

MR. STEIN: Well, I would suggest that-- Yes, Mr. Van Heuvelen.

MR. VAN HEUVELEN: Mr. Chairman, I am wondering when we are talking about this, the basic problem here is temperature of waste during the treatment process during these winter months. I am sure this problem is not unique in Fargo. It certainly must be occurring across the whole northern band of the United States.

What demonstrations or research has FWQA done to solve this type of problem? What type of treatment other than, say, lagooning holding all the wastes during the winter would perhaps solve Fargo's problem? We still have this temperature factor when, as you stated in your preliminary remarks, the bugs don't work.

MR. STEIN: That is right.

MR. VAN HEUVELEN: What are the possibilities of providing some funds to do some demonstration research in this particular area?

MR. STEIN: Mr. Rademacher, go ahead.

MR. RADEMACHER: I would say that all avenues should be explored, including the possibility, as you indicated, of lagooning if this appears to be the best way to do it. But certainly if there are possibilities of improving operation of existing type systems or different systems for this cold weather operation and the consultants can come up with these notions, I am sure that the Federal Water Quality Administration would be delighted to work together with them in coming up with a program in support of it.

MR. STEIN: But let me try to set this out. I don't think that as far as Fargo and my other recommendations on Moorhead and American Crystal or any of the others that at least the Federal Government is disposed to wait on the results of a long research program. We have to do this.

I guess we all have our own views on this. Again I say, we moved into a moving target. While you have this heat problem here, we have the same problem on the Missouri, as you know, Van, where during the fifties we had a primary treatment program all up and down the river, and now by the time 1970 rolls around that is not satisfactory and we are asking for secondary.

In other words, these things are moving up all the time.

The question that we have here is whether, given the kind of water quality we are going to be asking for on a year-round basis, a trickling filter alone is possible to--whether it is possible to do it. I am not quite sure that it is possible. I don't want to preclude any notion, because there may be plans for heating that trickling filter and making it work better. But even at its best, if, as I find, our scientists in dealing with the standards are talking in terms of removing 90 percent and upward of BOD, we don't even have trickling filters in the southern parts of the country that can quite do that.

Now, this is what I am getting at. I recognize that what we have here is higher water quality standards, and I look forward in the future, in the next 10 years, for even more strict ones than we have now.

If that is the case, and I think the City of Fargo knows this, the idea possibly is to come up with a more improved kind of treatment or some kind of method. We do know in other areas of the country where they have these rigid requirements, this treatment is available. Of course, it is more expensive. Either you need land for a lagoon or you need some kind of an enclosed system where you can control the heat and get yourself a pretty high BOD removal in the future.

Let me indicate one other fact. We have a BOD loading in the whole Fargo-Moorhead area of 2800 pounds, if I recall correctly.

MR. RADEMACHER: That is the limit.

MR. STEIN: The limit, absolute limit.

Now, as you begin to grow--and you are growing all the time. Maybe you don't see it as well as I do. Mayor, I am riding around here on the interstate highways and I see apartment houses where fields were when I was here the last time.

As you continue to grow, that river isn't going to change; that 2800 pound limit is going to have to stay for that river. In other words, you are going to have to gear yourself to a much higher degree of treatment.

Let me put it this way. Certainly we are in favor of research. But I think in solving the problem that you have here, and we will do all we can to get research facilities going, in dealing with the problem we have here, I think we have just a few months, until the middle of November, to come up with a plan certain and a proposal--

That is the date, October?

MR. RADEMACHER: October is the critical date.

November 21 is the ultimate date.

MR. STEIN: Ultimate. May I make this suggestion, that you not just wait for your engineer consultants to complete the job, but that Mr. Rademacher designate representatives from his office to work with you in the development of these plans, not to tell you what to do, but to indicate whether you are going to be on the kind of right track from our point of view, where the plans are going to be acceptable or not as you develop these plans, so we will know and you will know where we will stand.

In other words, I don't think, given this time schedule, that you can afford the luxury of having to develop these plans and then negotiating with us for a couple of months. Let's work, if we can, with the State and with you in the development of these things, and if you need any assistance or help, you can be sure we will do this.

But I think the critical date, and I will shift this, by October 21st, let us try for that date, where we should have a plan. What this means, I am not necessarily talking about detailed plans and specifications, but we should have a proposal from you of what you are going to do and a time schedule for doing it that we all can agree on, and I think that is possible. Don't you? Maybe not.

MR. VAN HEUVELEN: Well, I think so. I really had two questions, and you have answered one very well, I think, on this research and demonstration, because I have a feeling that we do need more information about cold weather treatment of wastes.

MR. STEIN: Absolutely.

MR. VAN HEUVELEN: The second question I wondered about after your statement of just a few moments ago that there will be a similar type of hearing for the people across the river. It seems to me this is a package deal, then. Is there any need to correlate dates on this so that we take compatible steps?

MR. STEIN: I understand what you are saying. I would like to correct that, if I can. This is for me, not for you. I didn't say there would be a hearing. I said the only one who can call the hearing is the Secretary. I recommended that. And I share your view that we have to move together on that.

But the fact is that the Secretary has called this hearing and we are bound by the statutory requirements here. From my point of view, from the point of view of equity, I don't see any difference between discharge coming from American Crystal or Moorhead--and Minnesota observers, if there are any here, please note--or one coming from Fargo, North Dakota.

However, that can't be a defense. I know I am not going to be able to sell that when I get back. It is like if a cop arrests me for going 90 miles an hour on your highway and I say, "Heck, two guys just passed me before you stopped me. How about those two?"

The point is, if there is a violation, we are under a legal obligation to stop it.

MR. VAN HEUVELEN: That is not my point. I am not trying to point the finger at the other two. I am trying to get the river cleaned up in this area, and I think what Fargo does is related to what other people do and what other people do is related to what Fargo does. Therefore, I think we have to have a package for this area.

MR. STEIN: Right.

MR. VAN HEUVELEN: This is my point.

MR. STEIN: If you just would follow what I said, and let this be in the record. There is nothing here--and I don't want to make any judgment, because I can't, of what the Secretary is going to do with the other sources here. However, by this October 21 date when that issue may be clarified, hopefully, further, there is no reason why the time schedule plan that you are going to come up with on October 21 will not be compatible with the other sources in the river.

MR. VAN HEUVELEN: O.K.

MR. STEIN: All right?

MR. VAN HEUVELEN: O.K.

MR. STEIN: Are there any other statements?

Yes. Identify yourself, sir, with your name, please.

MR. RATHMANN: F. H. Rathmann, Professor of Chemistry at North Dakota State University.

First an extension of Mr. Rademacher's question, his first question. I don't know anything about the water quality standards of Canada, but Canada must certainly have the temperature problem to a vastly greater degree than we do, at least in Manitoba and Saskatchewan. Do we know what methods they use? Or perhaps they just aren't interested because they don't have the water quality standards.

The other is that some of the European countries, like Poland and Norway, Sweden to some extent in the northern parts, although they do have a moderate climate on the coast, and the Soviet Union, I remember reading something about Moscow doing some rather thorough studies on the water pollution problem and coping with it, and I was wondering whether any use could be made, perhaps, of some of these studies or experiences?

MR. STEIN: Mr. Van Heuvelen.

MR. VAN HEUVELEN: Fargo has to make the decision of which way they are going and what type of treatment they are going to use.

In reply to the question about what Canada has used, I think the northern reaches of Canada, especially north of us here, have gone very heavily to the lagoon method of treatment, because this type of treatment can hold wastes and keep it out of the stream during those critical months. Some parts of Canada, of course, are actually south of us and do have warmer temperatures, and in the larger metropolitan Canadian areas they do use conventional treatment and do have the same type of problem that Fargo has experienced.

MR. STEIN: Mr. Ruby.

General Discussion

MR. RUBY: I am somewhat familiar with what the City of Winnipeg is doing. They have an activated sludge plant, everything is completely enclosed, they are heating it, and they are meeting the 25 milligrams per liter BOD effluent standard.

MR. RADEMACHER: I was just going to comment upon the Professor's remarks about the European experiences, and so forth.

I might say that we have an active interchange on the basis of the Pollution Control Federation, and also this administration in dealing with our counterparts in Europe, including the Russians, and what their experiences are over the whole range of treatment, so that we are familiar with many of the things that they are doing, as they are familiar with ours and hopefully any experiences they have. It calls to mind one process up in northern Sweden, which is much the same as you are talking about, Mr. Ruby, only with some sophisticated additions, that the process is very effective during all types of weather, in comparable weather that we have here in Fargo.

So that the point is well taken, but we do, hopefully, know what is going on in other parts of the world. In fact, just two weeks ago we had an International Symposium, for instance, on lagoons down in Kansas City and we had people from 40 States and a dozen different countries, wasn't it, Van?

MR. VAN HEUVELEN: Yes.

MR. RADEMACHER: From all over the world, exploring the problems that these lagoons have, also what is the best design characteristics and where they can be used the best. I think that with this kind of interchange we distill the best information available and we can come to conclusions in terms of treatment, for instance, for the situation we have here.

MR. STEIN: Yes. I am sure in the City of Fargo you have people who know this. There are all sorts of problems that you have with these plans, and I think Mr. Ruby's remarks are well taken.

One, lagoons are used in many areas up north. And you know, at one time we had a Regional Director here, I guess he was one of the predecessors of Mr. Rademacher, you may know him, Glen Hopkins. Glen Hopkins said you could use lagoons in any climate no matter how cold it was, and it got printed in the Readers Digest. Well, one fellow up in Alaska or some city decided to build a little lagoon. They went out on the permafrost and they started scooping out the permafrost. When they got through the permafrost, down went the Cat. Fortunately the man got off, but they lost the Caterpillar tractor. Then they sent us a bill, asked us to pay for the tractor, since they proceeded on the basis of our judgment. (Laughter)

So there are always problems.

But if you listened to what Mr. Ruby said, I think the most succinct way you can put this is that if you have a plant, and particularly if you are dealing in a large population center, if the plant goes awry, you are not dealing with a perfume factory, it is going to smell.

The city officials are aware of that when they make their choice of the kind of treatment system they are going to have in the space they have and what they are going to do. And as Mr. Van Heuvelen says, the judgment on what path they are going to take has to be left up to the City of Fargo. But I am sure that the city officials are very sophisticated in the matter of cold weather treatment.

We have a considerable amount of experience in that;

so has Mr. Van Heuvelen. I think we all agree, though, that considerable research has to be done, because if we are going to demand higher and higher degrees of treatment we are going to have to come up with something better than we have now.

MR. VAN HEUVELEN: That is right.

MR. STEIN: That we know.

With that, I think we are trying to work with the here and now with Fargo and I think they can come up with a plan.

MR. RADEMACHER: I would like to make one additional point. You mentioned the 2800 pounds BOD limit for the river. This was, as you recall, based upon the work back in 1965 and 1966 and one of the recommendations. That was based on a BOD level of 30 milligrams per liter in the river. We are talking about a 25 milligram per liter effluent discharge, for instance, we are talking about a total of 2300 pounds BOD.

MR. RUBY: I would like to add in that connection that at some future date, and we are not certain at this point just what date, there will be garrison diversion water into the river--

MR. RADEMACHER: Yes.

MR. RUBY: --which will, when it comes in, raise the 2300 permissible pounds of BOD, which will, hopefully, with the 25 milligrams per liter effluent standard, take care of the growth of our metropolitan area here.

MR. STEIN: That is right. I think that point is well taken.

Any other comment?

If not, I understand Ron Stahlberg, the City Engineer of Moorhead, would like to make a statement.

Mr. Stahlberg.

MR. GEBERT: Mr. Stein, just before he comes up, would somebody explain the significance of the absolute November 21 and the critical October 21 dates?

MR. STEIN: All right. The point is, 180 days expires, as I understand, on November 21. Right? And my notion is that unless you want to live dangerously, you don't go right up to the last day to comply if you are dealing with the Federal Government, certainly, on a law case. You know, we have the Department of Justice, the FBI, a load of other officials that you gear into action, and obviously somebody is not going to press a button on November 21 when it is the last date. Someone puts things into gear a little before that.

So if we have that October 21 date and we got this resolved, no one is going to press that button and start gearing up. Often when the Federal Government begins to gear up, people get a little apprehensive.

And I say this, you know, not to make any threats or anything of that kind, because I am sure we will work this out. But at least the way I work in the system, the point is that moving the army troops to an armory or somewhere else, like they had them the last time in the basement of the Interior building, to wait for a possible callout, in itself is a device which, if we can, I would like to avoid, because that creates tensions in itself.

If we get this squared away by October 21, we will be able to avoid all this preliminary action and that is the reason for that date, to give us the leeway.

Mr. Stahlberg.

MR. STAHLBERG: I have a few comments.

MR. STEIN: Do you want to come up here?

RON STAHLBERG

CITY ENGINEER

MOORHEAD, MINNESOTA

MR. STAHLBERG: I have a few comments about the problems that have been discussed at Moorhead here.

The lift station that was bypassing was a 1933 lift station built in the flood plain of the Red River. Approximately two years ago or 30 months ago we put together a set of plans and specifications for a storm sewer separation project and we also included a new lift station to replace this one.

That contract was awarded last year, and because of the equipment problems the new lift station wasn't built before the old one quit operating, and so we had a problem of the lift station under construction and the old one not functioning. The new one is now operating and we have no problems with it.

We do have some problems in our sewage treatment plant; we are well aware of them. I think the Federal engineers are also. In March of this year we applied for a Federal grant for additional facilities. In July, approximately 10 days ago, we submitted plans and specifications to the Minnesota

Pollution Agency for additions to the sewage treatment plant.

Is it permissible for me to ask a few questions of Bob Hegg?

MR. STEIN: You can ask any questions.

MR. STAHLBERG: O.K.

Bob, what is the BOD percentage--

MR. STEIN: I am sorry, if you ask a question directed to someone, use their last name. We need it for the record.

MR. STAHLBERG: O.K.

Bob Hegg, what is the percent of BOD removal from the Moorhead plant?

MR. HEGG: Well, we have calculated this and it varied throughout the survey period, but generally it was greater than 80 percent reduction.

MR. STAHLBERG: The other question I have is you gave percentages of total BOD. What is the percent that Moorhead contributes to the total BOD?

MR. HEGG: That also varied throughout the survey period and I would have to look at that table to give you the exact values. It is in the report.

MR. STAHLBERG: I have no further comments.

MR. STEIN: All right. Thank you.

Do you want to put that in the record or not?

MR. HEGG: I can.

MR. RADEMACHER: It is in the record.

MR. STEIN: Yes, it is in the record. Can you find it in a hurry or not?

In other words, they range from 2 percent in November, 3 percent in October, 10 percent in December, 12 percent in January, 14 percent in September, 18 percent in March, and 26 percent in April. So there is a pretty good range.

Are there any other comments?

If not, I would like to thank you all for participating. May I make the suggestion that Mayor Lashkowitz and Mr. Van Heuvelen designate people for Mr. Rademacher or his designee to be in touch with so we can start this procedure working and hopefully come up with the proposal as soon as possible. As a matter of fact, if you can beat that October 21 date, I think it will be all to the good all around. Again I wouldn't push this too far.

Are there any other comments or questions? Does anyone else want to say anything?

Closing Statement - Mr. Stein

If not, I think this has been a very helpful and illuminating meeting. I think again I would like to express my appreciation to the staff of the North Dakota Health Department and particularly to the City of Fargo, who have always been most helpful on this and have helped us work out these problems. It is through that kind of cooperation that we can develop an agreed-upon factual statement and get ahead.

Again I want to emphasize here that this question of abating pollution and meeting these rigid requirements of the Red River of the North is something that we all have to approach on a partnership basis and certainly not in an adversary way, because otherwise we are never going to lick this problem. You have some beautiful country here, but you have a unique problem in the United States and it is something that is going to take everyone's good will and ingenuity and money, I guess, to solve.

With that, thank you very much. We stand adjourned.

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(Whereupon, at 12 o'clock the hearing adjourned.)

REPORTER'S CERTIFICATE

I, VIRGINIA H. RANKIN, Certified Shorthand Reporter, hereby certify that the proceedings had in the matter set forth in the caption page hereof were reported in shorthand by me, afterwards transcribed, and that the foregoing pages numbered 1 to 122, inclusive, contain a true transcript of said shorthand notes.

Certified Shorthand Reporter